This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

THE

SANITARIAN.

A MONTHLY MAGAZINE

DEVOTED TO THE

PRESERVATION OF HEALTH, MENTAL AND PHYSICAL CULTURE.

VOLUME XLVII., JULY TO DECEMBER, 1901.

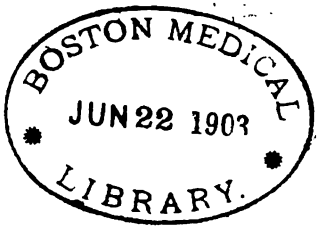
A. N. BELL, A.M., M.D., Editor.

T. P. CORBALLY, A.M., M.D., HARRY KENT BELL, M.D., } Associate Editors.

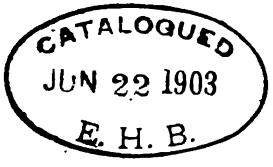
BROOKLYN-NEW YORK, N. Y.: A. N. BELL.

1901.

ε ε ۲۴



Entered according to Act of Congress, A. D. 1901, by A. N. BELL, in the office of the Librarian of Congress, at Washington.



7733

BOSTON MEDICAL
JUN 22 1903
LIBRARY

THE SANITARIAN.

JULY, 1901.

NUMBER 38.

INSECTS AS DISSEMINATORS OF DISEASE.*

By CH. WARDELL STILES, Ph. D., Washington, D. C.,
Zoölogist United States Bureau of Animal Industry.

It is sometimes charged that scientists make public too many facts concerning microbes, and that, at the present rate, the laity will soon either become disgusted with hygienic research or will come to the belief that death lurks in everything we eat, drink, touch, or breathe.

That wild hygienic theories and speculations have at times been launched upon the public cannot be denied, and some men have undoubtedly laid themselves open to censure by rushing into print with unjustified conclusions based upon scientific dreams. Let us recall, however, that until the cause and method of dissemination of a given disease are known, the hygienist whose duty it is to guard against that malady must take into consideration all imaginable possibilities. When, on the other hand, the cause and source are once matters of positive knowledge, effort may be intelligently concentrated, and the preventive measure given a definite direction.

The case is much the same as in military operations. If you know, either from information obtained by your scouts or from a technical military or geographic knowledge, that your enemy must take a certain route, your plan of campaign is much easier than if the opposing force may arrive by any one of twenty different roads.

Individual workers in the medical sciences are the nation's scouts in hygienic matters, to determine by exactly what route our microbic enemies arrive, just as military scouts learn the enemy's movements or as the traveling salesmen and government

*Annual Toner Lecture, delivered at Georgetown University, April 12, 1901.

consuls are the scouts for a nation's trade. Some erroneous reports are occasionally brought in, and not every Funston captures his Aguinaldo, but boards of health and other sanitary organizations form clearing houses for the scattered investigations; the reports are tested; some are verified, others disproved, and the general plan of campaign against the disease is determined.

When it is definitely proved by what route our microbic enemies arrive, it is clearly proper to lay the matter before the public —not for the purpose of causing alarm, but in order to enlist cooperation in fighting disease, thus protecting human life and both local and national prosperity.

That some of the hygienic measures recommended to the public do not meet with immediate popular approval or even credulity need not cause surprise, for many of the views advanced are so—shall I say—*romantic* in character, that even experienced scientists call for a confirmatory demonstration of the claims advanced before they are willing to accept them.

This evening I invite your attention to a few of these biologic romances in connection with the subject of disease.

Insects must be looked upon as among our best friends and worst enemies. Some insects are instrumental in the spread of the pollen by which certain plants are fertilized, and they are thus important factors, not only in beautifying our surroundings, but also in the economics of the country; destroy all of the bees and you will destroy one of the important forage plants—namely, clover. Other insects are injurious to plants or animals; it is estimated, for instance, that certain flies cause an annual loss of about $50,000,000 to the cattle industry of the United States. Still other insects are active in the dissemination of disease germs; a certain mosquito in Italy is the normal carrier of a malady which causes that country 15,000 deaths and about 3,000,000 cases of disease per year. When we consider the aggregate human suffering involved and the economic loss brought about by this mosquito, our imagination is almost staggered. Assume, for instance, that these 3,000,000 patients average a loss of one dollar—surely a very low estimate—in time taken from work, in doctors' bills, in drugs, funeral expenses, etc., etc., and we obtain the total of $3,000,000, in addition to the pain endured, and the economic loss through death.

The insects which come more especially into consideration in connection with the diseases of man are mosquitoes, flies and

fleas; and when we turn to the diseases of animals, we must add to this list the ticks and crustaceans, two groups of arthropods closely related to insects.

Let us now distinguish between two general classes of diseases —first, those which must necessarily be transmitted by insects; and, second, those in which insects are only accidental, though in many cases important, factors. Thus, malaria is normally transmitted by mosquitoes, and is dependent upon them; kill off mosquitoes and malaria will disappear. Typhoid fever, on the other hand, *may* be transmitted by flies, yet it is not dependent upon them; kill off all flies and you will undoubtedly decrease typhoid; but since insects are only accidental and not necessary spreaders of this malady, such measures will not eradicate it.

We may lay down two general biologic rules, which, I believe, are enunciated to-night for the first time: *The first rule, to which at present a few exceptions are known, is that diseases which are* accidentally *spread by insects are caused by parasitic* plants, *particularly by bacteria; the second, to which no exceptions are as yet known, is that those diseases which are* dependent *upon insects or other arthropods for their dissemination and transmission are caused by parasitic* animals, *particularly by sporozoa and worms.*

Let us now turn to the germs which cause certain diseases, and follow their transmission.

You have all heard that during the recent war with Spain many cases of typhoid fever occurred among our troops, particularly in certain camps, and you have read that the germs were spread by flies. For nearly thirteen years it has been known that if the typhoid bacillus is fed to flies, virulent germs can be found in the fly specks. This fact has been demonstrated by experiment. We do not, however, have to assume that the insects must swallow germs in order to disseminate them, for by simply lighting upon typhoid discharges they soil their feet and mouth parts with the bacilli; then flying to the kitchen, the pantry, or dining-room, and lighting upon food, insects can spread typhoid to articles of diet, and thus disseminate the disease. There can, in fact, be scarcely any reasonable room for doubt that typhoid was spread among the troops in this manner.

Likewise the germs of tuberculosis have been fed to flies, and twenty-four hours later the bacilli have been found in the fly specks. Insects can also carry the bacilli on their feet and mouth parts after feeding on tubercular sputum.

Among the other diseases which may be disseminated in this way, we may mention in particular Egyptian ophthalmia, Florida "sore-eye," and Asiatic cholera. For the first two maladies, the evidence is based on observation, but the facts at hand are so complete that they can scarcely be doubted. In the case of Asiatic cholera, however, the bacillus which causes the disease has actually been found in flies caught in a room where post-mortem examinations on cholera cadavers were being made.

What, now, are the practical lessons which we should draw from these facts—practical lessons not only for the medical fraternity, but also for the laity, and especially for the housewife? A moment's thought will show that they are: *First,* prevent flies from breeding; *second,* keep them away from diseased material; *third,* keep them away from our food—three propositions which, at first thought, may appear purely theoretical, but which, nevertheless, are thoroughly feasible.

You have all heard of anthrax or malignant pustule, which affects both man and live stock. It is quite generally supposed that this malady is transmitted by the bite of flies and mosquitoes. There is not, however, very much evidence in support of this view, and all the experimental evidence as yet available is contrary to it. It would, in fact, appear that the danger involved has probably been greatly exaggerated. If, indeed, anthrax were normally transmitted in this manner, we should expect to find it much more general than the malady really is, for biting insects are common around live stock, and they do not confine themselves to one animal, but fly from one to another. If, therefore, a case of anthrax appeared in a herd, the probabilities are that within a few hours, or a few days at most, practically the entire herd, as well as the people in the vicinity, would be suffering from this disease. At present, we must admit that it is possible that anthrax may be disseminated in this manner, but at the same time it would appear that such transmission is probably the exception rather than the rule. It seems probable that one of the common methods of keeping this disease alive is the leaving of carcasses of anthrax animals on the fields. Cattle later chew the bones, and thus expose themselves to infection with anthrax spores. That biting insects would undoubtedly swallow the germs of this disease while sucking the blood of a sick animal, and thus disseminate the bacilli through their droppings, is, of course, possible; but all experimental evidence thus far ac-

cessible indicates that the germs rapidly lose their virulence in the insects' intestines.

Similarly it has been maintained that bubonic plague, erysipelas, and leprosy are transmitted by the bite of insects, but this theory cannot at present be admitted as of general application. Much more probable does it seem that insects may transmit these diseases in another manner. Suppose a flea, infected with bubonic plague, succeeds in reaching a healthy person, and the latter, in an attempt to allay the irritation caused by his unwelcome visitor, scratches himself and at the same time crushes the flea. The possibility is present that some of the germs from the intestine of the insect will be rubbed into the fresh scratch, and thus bring about the disease; or, since fleas deposit their excreta on the skin of their victims, the possibility is present that the germs enter the system by way of the wound caused by the flea bites, instead of by the act of biting on the part of the flea. From experimental evidence before us, these two possibilities must undoubtedly be admitted, not only in connection with fleas, but also with the itch mite. We must also admit the very high probability that flies transmit bubonic plague accidentally to the food, after lighting upon plague discharges. Finally, we cannot deny that even ants, which have fed on rats dying from plague, may perhaps spread the disease.

None of these facts or possibilities should frighten us or lead us to ridicule science for taking them into consideration, but all of them should induce us to take every precaution possible, especially in cases of bacterial diseases, to have the sick-room scrupulously clean and free from insects of all kinds.

Let us now turn from bacterial diseases, the spread of which by insects is possible, to some of the diseases caused by animal parasites, and for the dissemination of which insects and closely allied arthropods are necessary.

Mosquitoes are positively proved to be necessary for the spread of at least two diseases in man, known as malaria and filaria disease, or Arabian elephant foot. Thanks to the efforts of two of our fellow-townsmen, Drs. Reed and Carroll, and their army colleagues, the present indications are that mosquitoes are necessary for the spread of yellow fever also. Now a curious, but from a biologic standpoint not an unnatural, fact is that each of these diseases requires a certain kind of mosquito.

Malaria is caused by a microscopic protozoan which lives in the blood. In the common type of the malady it takes this para-

site just forty-eight hours to complete its development, and every forty-eighth hour, corresponding to the time when your chill begins, each germ breaks up into about fifteen young germs. Assuming that you have only one of these minute parasites in your blood to-day, you may at this rate be the happy possessor of about 576,000,000,000 wriggling parasites after twenty days, each germ destroying a blood cell. This is compound interest with a vengeance, and leaves in the shade any Wall Street accumulation as yet recorded.

If this rapid increase were to continue, every person who is once attacked with malaria would soon become skin, bones and germs, and every case of malaria would inevitably be fatal. *Fortunately, however, it is a more or less common biologic law that protozoa which thus increase in geometrical ratio, by asexual reproduction, soon reach a point where further multiplication is impossible until the organisms pass through asexual stage. It is this law (the explanation of which is not entirely clear) more than all the doctors in the world combined which accounts for the comparatively low death rate of malaria.*

After a number of generations of asexual forms, male and female parasites appear in the blood, and these cannot reproduce further until they enter the body of a mosquito belonging to the genus *Anopheles*. The next generation forms in the mosquito, and the young parasites then reach the insect's salivary glands and are introduced into the blood of the next person bitten.

The insect which disseminates malaria in this way is a small dapple-winged mosquito, with long antennæ; in a resting position its body is straight, and is likely to assume a posture at nearly right angles to the wall; and while serenading it sings about four tones lower than does the ordinary mosquito glee club. The female lays from forty to one hundred boat-shaped eggs, which float around on the water, and in three days' time hatch out into larvæ. The latter swim around in the water, coming to the surface to breathe and feed; they assume a position nearly parallel to the surface, and being possessed of a "rubber neck," they can turn their head half way around so that the mouth appears to be on the back; after about sixteen days they turn into peculiar pupæ which have very large heads and bear a more or less close resemblance to a lobster salad nightmare. Five days of fasting in this stage, and the adult winged mosquito issues and is ready to spread malaria, if conditions are favorable.

Another disease transmitted by mosquitoes, and more interesting to the biologist than to the patient, is known as filaria disease. This malady is caused by a worm. The adult parasite lives in the lymphatic system, while the embryonic worms swim around in the blood. Curious to relate, these embryos are found in the peripheral circulation only at night, or more properly speaking, during the hours of sleep. If certain mosquitoes, while sucking blood, swallow these embryos, the young parasites undergo a series of changes in the insect, and finally reach the salivary glands; from there they pass down the proboscis, and are inoculated into the body of another person.

In this instance the guilty mosquito is different from the one which spreads malaria. It possesses short antennæ, and belongs to the genus *Culex*. I have no illustration of this species (*Culex cilaris*) here this evening, but can present to you its American first cousin, which sings tenor, and is rather likely to hold its hump-backed body more or less parallel to the wall when in a resting position. Instead of laying boat-shaped eggs, it deposits two hundred to four hundred ova which are fastened together. Having become very proficient in the trick so long practiced by Columbus, the eggs are all placed on end and remain perpendicular. The larvæ hang downward in the water, and the pupæ have smaller heads than we saw in *Anopheles*.

You have all heard of the important work which General Sternberg's yellow fever commission is accomplishing in connection with this much-dreaded disease. I cannot show you the germ which causes this malady, for it is not definitely determined as yet. The mosquito in question is known as *Stegomyia fasciata;* it was formerly called *Culex fasciatus,* and is closely related to the form which transmits filaria disease. It possesses banded legs, and has conspicuous silver stripes on the thorax and abdomen. It breeds in standing water, and its larvæ and pupæ are much like the same stages of *Culex*.

It has thus far been shown that this insect, if it has fed on the blood of a yellow fever patient, may, after about twelve days, transmit the disease by means of its bite to a healthy and non-immune person. This discovery is of extreme value, and we may all well be proud that we can count the discoverers among our personal friends. It is, however, to be expected that until the germ which causes the disease is recognized, scientific men in general will be somewhat conservative in giving to this discovery its full

apparent value from a standpoint of public hygiene. The fact that yellow fever is transmitted by the bite of the mosquito not until a considerable time has elapsed—namely, twelve days after the insect has sucked blood—indicates very strongly that yellow fever is caused, not by a bacterium, but by a sporozoan. If this latter supposition can be demonstrated, then the conclusion will, from analogy, be warranted that mosquitoes, and probably only mosquitoes, can transmit this disease. If, on the other hand, the disease should be proved to be bacterial in nature, analogy would not at present warrant us in concluding that mosquitoes are either necessary to its transmission or that they are the only transmitters. As already stated, however, analogy at present points very strongly to a sporozoan as causal agent; and if this can only be proved, the importance of the discoveries already made by our friends will be far greater than is at present recognized.

The facts brought forward in connection with the last three diseases mentioned should convince us of the necessity of a public campaign against the mosquito. Practical zoölogists and sanitarians see the possibility of killing off these insects and thus eradicating the diseases in question. This cannot, of course, be done all at once, but it can be done with comparatively little expense in all well-settled communities. Viewed purely from the standpoint of dollars and cents, it would be an excellent business investment for malaria districts to eradicate mosquitoes.

In the Southern States there exists among the cattle a disease known as Texas fever. Its economic importance may be partially appreciated when we recall that a quarantine line runs across this country from the Atlantic to the Pacific, and that except during a few weeks in winter it is permitted only under stringent regulations to ship cattle from places south of that line to the Northern markets, while driving the animals to Northern pastures is prohibited. This disease is quite similar to malaria, being caused by a minute parasite in the blood. So-called cattle ticks act as transmitters of the malady. When ticks have filled themselves with blood, they drop to the ground and lay their eggs. The young of the next generation, although they have not been in contact with an infected steer, seem to have taken the disease from their mother, for they can transmit it to healthy cattle.

Another disease which may be mentioned in this connection is found among the live stock in certain parts of Africa, and is one

of the most serious drawbacks to the country. It is caused by a minute parasite in the blood, and is transmitted by the so-called tse-tse fly. If these flies bite a horse it may be dead in a few days.

The last disease I will mention is one of considerable historic interest, and is among the oldest maladies known. It is caused by a worm which is, or at least by some persons is supposed to be, the fiery serpent of the Children of Israel. This fiery serpent, or dragon, is a worm about a yard long, which is found under the skin, where it produces a painful tumor. The life history of the parasite is not yet completely demonstrated, but it is established that the worm spends a part of its life in small crustaceans of the genus *Cyclops,* and is probably taken in by man in the drinking water. Fortunately the Children of Israel who have come to this country did not bring the fiery serpent with them. It has, however, been found on an island off the coast of South America, where it was introduced with negroes from Africa. The malady it causes is primarily a tropical disease, and we have little to fear from it in this country.

It may interest you to know something regarding the scientists who have been active in investigating this important subject of the spread of diseases by insects and other arthropods. While a number of European, Asiatic and African authors have published exceedingly valuable and important contributions in this line of work, it will perhaps be of particular interest to you to know what Americans are engaged in this research. Several of the Americans in question are, or have been, Washington men, and are known to you personally. I will mention the names in alphabetical order. While not pretending to give a complete list, we may recall the following names:

Dr. Aristides Agramonte, one of our Cuban colleagues, is a member of the yellow fever commission.

Dr. James Carroll, also acting assistant surgeon of the United States army, has been engaged in the work on yellow fever. He gave the disease to himself by allowing an infected mosquito to bite him, and he came near losing his life in the experiment. For several days he lingered between life and death, but he fortunately recovered, and is to-day in Washington.

Dr. Carlos Finley was one of the first persons to experiment with mosquitoes in connection with yellow fever.

Dr. L. O. Howard, entomologist of the United States Department of Agriculture, has been particularly active in studying

the various kinds of mosquitoes which come into consideration, working out their life history and suggesting practical measures for their eradication. He has also made a careful study of the various insects which come into consideration in connection with typhoid and other bacterial diseases.

Dr. A. F. A. King, of this city, was the first person to give a scientific summary of the arguments in favor of the mosquito theory of malaria.

Dr. G. M. Kober, of this city, deserves credit for his early and frequent reference to flies as spreaders of typhoid, particularly from box privies.

The late Dr. Jesse W. Lazear, acting assistant surgeon, United States army, was associated with Drs. Reed and Carroll in their yellow fever work. He contracted the disease and died of it after an illness of a few days.

The late Professor Joseph Leidy, of Philadelphia, was one of the first to point out the dissemination of gangrene among wounded soldiers by the agency of flies.

Dr. George H. F. Nuttall, of California, at present in Cambridge, England, has been actively engaged in experimental work with bubonic plague and anthrax, and their transmission by insects. His recently published summary of the general question of insects as transmitters of disease is the most extensive paper as yet issued on the subject.

Dr. Nott, of New Orleans, was apparently the first to suggest the possibility of the transmission of yellow fever by means of mosquitoes.

The late Dr. Shakespeare, of Philadelphia, has rendered valuable service in connection with the investigation of the spread of typhoid among troops.

Dr. Walter Reed, of the United States army, is at the head of the yellow fever commission to which we owe the brilliant results already mentioned.

Dr. Theobald Smith, formerly of the United States Bureau of Animal Industry, now of Harvard University, discovered the cause of Texas fever, and demonstrated its transmission by means of the tick. His publication on the subject represents one of the finest pieces of pathological work ever issued by an American author.

Surgeon-General Sternberg, of this city, has repeatedly insisted upon the necessity of keeping flies away from infectious material.

Drs. Vaughan and Veeder, the former of this city, were both actively engaged in the investigation of the spread of typhoid among our troops by means of flies.

In conclusion, ladies and gentlemen, I hope that my remarks this evening will not prejudice you against insects in general. Being a zoölogist by profession, I have more or less of an affection for these winged creatures, and should dislike to see you become too antagonistic toward them. I find myself somewhat in the same position as one of our American entomologists—you all know his name: One day a lady who was about to visit the German Rhine applied to him for advice relative to protecting herself against the fleas; he replied that he could not aid her, since, being a zoölogist, his sympathies were entirely with the fleas. Not every germ is dangerous, and not every insect disseminates disease. Many germs and many insects are positively useful to us. The dangerous germs and the insects which transmit them should, however, be guarded against and destroyed, and although the Washington Humane Society is placing itself on record as opposing the protection of life and property by the dehorning of cattle, we may confidently hope that that active and well-intending body of esteemed fellow-citizens will still permit us to kill mosquitoes, flies, fleas and bedbugs, not only in order to increase our comfort, but in order to save human life.

SANITATION AND YELLOW FEVER IN HAVANA.

Report of Major V. HAVARD,
Surgeon U. S. A., Chief Surgeon.

OFFICE OF CHIEF SURGEON,
HAVANA, February 8, 1901.

The Adjutant General of the Department.

SIR: I have the honor to submit the following report on the sanitary condition of Havana since 1890, and the effect of the American intervention upon the health of the city as especially shown by the vital statistics of the year 1900. The remarkable discoveries recently made in the mode of transmission of yellow fever, and their consequences, are also considered.

Havana occupies an exceptionally healthy site and enjoys as salubrious a climate as can be found in the tropics, yet under the Spanish regime its death-rate was always higher than that of any

large city in Europe and America, and, in some years, higher than that of any city in the civilized and semi-civilized world. It may be said that sanitation as a measure of public comfort and safety was completely ignored; that yellow fever and other infectious diseases were considered unavoidable visitations, and that even a mortality of 2,666 victims from small-pox in 1896 and part of 1897 failed to arouse the authorities to a proper comprehension of the necessity of vaccination and revaccination.

Previous to 1888 vital statistics in Havana were not collected and computed by municipal or State authorities, and are not deemed sufficiently reliable. For our own purpose it will suffice to begin with the year 1890. Taking the nine years, 1890-1898, preceding the intervention, we find, according to the carefully revised tables of the chief sanitary officer, that Havana had a death-rate of 46.71 per thousand of population, ranging from 91.03 in 1898, to 30.66 in 1893. In order to obtain the death-rate of peaceful, normal times, we must leave out of count the three years 1896-1898 covering the last Cuban insurrection and the Spanish-American war; we then find that the rate for the six normal years 1890-1895 is 33.21 per thousand, a rate higher than that of the principal cities of Europe and America during about the same period, Dublin being the nearest to it with 30.8 per thousand. This enormous mortality of peaceful times was not due to virulent and widespread epidemics (specific infectious diseases such as scarlet fever, diphtheria, influenza, etc., being infrequent and of little gravity), but to the general diseases constantly operating in large cities, such as tuberculosis, pneumonia, bronchial affections, bowel complaints, malaria, meningitis, cardiac and arterial diseases, and malnutrition. Yellow fever was always present, but its effect upon the mortality curve was comparatively slight, being responsible for less than one-seventeenth of the total number of deaths (2,452 out of 42,235).

I shall now consider briefly to what special causes the high mortality of Havana should be attributed, how they can be remedied and what has already been done to that end. These causes can be placed under the following headings: Sewerage; Street and House Sanitation; Disposition of Garbage; Overcrowding and Ventilation; Clothing; Food.

A good system of sewerage is the crying need of the day, and so long as this need continues, no method of sanitation, however rigid, can be entirely successful. So long as the city is honeycombed with latrines, old and new, and fragments of ill-con-

structed, unventilated sewers, often mere elongated cesspools whose contents seep into the porous limestone, a high rate of sickness cannot be prevented. This all-important question of sewerage for the city and suburbs has been under expert consideration for several years, the many obstacles in the way are being gradually surmounted and there is hope that the work will soon begin and be completed within two or three years.

That sewerage has a most marked effect upon mortality has been abundantly demonstrated, perhaps nowhere better than in the city of Buenos Aires, where the number of deaths was brought down from 30 per thousand in 1890, when the sewer system was inaugurated, to 17.1 in 1899. To put it briefly, Havana needs sewers: to carry off safely to the sea all excreta and waste water; to reduce to a minimum those offensive odors which, although perhaps not germiferous, have nevertheless a deteriorating effect upon the health; to keep the ground clean and dry.

Closely connected with sewerage, in Havana, is the question of street pavement. That our streets are wretchedly paved is but too obvious; many improvements are made every day in order to render traffic practicable and safe, but they can only be temporary, and the general repaving which is so necessary must await the laying of sewers. The excellent effect of a hard, smooth pavement upon health is unquestionable; all dirt, dust and liquids which would find lodgment in holes and interstices, or soak into the soil, being swept or washed away.

Street and house sanitation has been vigorously and successfully carried out from the beginning. Streets, squares and wharves, in spite of bad, uneven pavement and soft limestone, are to-day cleaner than those of New York city. A rigid house-to-house inspection brings about not only the cleansing of dirty premises, but also the correction of faulty drainage and plumbing. During the year 1900, each house in the city was inspected three times, the result of each inspection being carefully recorded on a printed form in the office of the chief sanitary officer. Besides the work done by owners and tenants, under the direction of inspectors, more than half the houses were overhauled by the cleaning brigades of the sanitary department. Sanitary defects requiring reconstruction are referred to the engineer department for technical specifications, and after the owner has been given a hearing, the necessary license is issued by the Ayuntamiento (city council); the process is satisfactory, but somewhat circuitous and susceptible of further improvement.

The bay formerly received most of the garbage and refuse from the city, and its reputation as one of the filthiest in the world was not at all unmerited. One of the first problems solved by the American authorities was the proper disposition of garbage; it is now mostly carried out to the deep sea; a small portion is cremated. Strict measures have been taken to prevent the dumping of offal and refuse from ships, wharves and slaughterhouses into the water. The result has been very good; although the bay still receives much drainage and sewage, its waters are not nearly as foul as formerly, more fish are found in it, and its immediate shores are among the healthiest parts of the city. I believe that when all sewage is carried to the open sea as contemplated, the bay will completely disinfect itself, becoming as free from sanitary objection as any bay within the tropics, and that the proposed canal to connect its southwestern end with the sea, in order to wash out its impurities, is unnecessary and would be useless.

The overcrowding in Havana may be imagined when it is stated that the present population of 250,000 inhabitants is contained in about 26,000 houses (including buildings of all kinds), or at the rate of 9.4 to each house; that a large proportion of houses have but one story, very few more than three, and that, in tenement districts, families of five or ten people living in one or two small, dark rooms are not at all uncommon. There is not only overcrowding within the houses, but also overcrowding of houses themselves, the city covering a smaller area than any town of its population in America, if not in Europe. This is the natural result of the former unsettled political condition of the country, obliging all the people to reside within protected zones.

Although the walls of the old town have been torn down and the city has expanded in several directions, the lower classes, gregariously inclined, still crowd in tenement houses where good hygienic conditions are impossible. Small individual cottages, such as are so commonly seen in the suburbs of American and English cities, and which have done so much for the comfort and health of the workingman, are still a desideratum. Such cottages would yield a handsome profit if rented at the prices now extorted by heartless owners from the poor inmates of tenements. Let us hope that the present extension of trolley lines into the suburban districts will bring about this much-needed improvement.

However objectionable this overcrowding, yet we must admit that in the tropics, where doors and windows are generally left open, it is not attended with the same evil consequences from

atmospheric impurities as in the more northern latitudes, where the cold outside air must be more or less excluded; ventilation is always easier and more complete. On the other hand, the fermentation and decay of vegetable and animal substances is much more rapid, and bad odors more frequently develop, so that greater cleanliness is required. Again, the houses of the lower and middle classes in Cuba have ill-fitting doors and windows, mostly solid panels which cannot be closed without obscuring the rooms, and often no ceilings; such houses cannot be secured against cold, dangerous draughts, and, in the absence of provision for heating, cannot be made comfortable when the thermometer falls below 70° Fahrenheit.

The want of suitable clothing is also severely felt by the many who, from poverty and ignorance, do not protect themselves against weather changes, either by flannel underwear or outer dress adapted to the temperature. It is specially felt by the great number of neglected male infants often allowed, even in winter, to go naked or scantily clad about the house or in the street.

The food of a large proportion, if not a majority, of the population, consists mostly of bread, vegetables, fish and fruit, sometimes in insufficient quantity; meat is an expensive luxury quite beyond their means. From this circumstance, some writers have jumped to the unwarrantable conclusion that there is an instinctive dislike for meat in tropical countries and that one is better off without it. This conclusion is disproved by the fact that meat, in a great variety of forms, is always found upon the tables of the well-to-do, and by the striking contrast between the robust, healthy-looking meat eater and the thin, anemic, pot-bellied fish and vegetable eater. The truth is that meat is an indispensable component of good diet in all parts of the world.

The resultant of all these adverse conditions is a physically weak, unresistant race, an easy prey to many diseases and incapable of natural increase, the deaths, until lately, largely preponderating over births.

Of prevailing diseases, *tuberculosis* is the principal and most widespread. During the ten years 1890 to 1899 were recorded 16,830 deaths from tuberculosis; that is, 16.5 per cent. of the total mortality and 7.5 per 1,000 of the population. These figures exceed those of any other country in Europe or America and are at least twice as high as those of London and New York. During the same period, yellow fever furnished only 4.71 per cent. of the total mortality, or 2.18 per 1,000 of the population. It may be

interesting to inquire into the conditions specially productive of tuberculosis in this city; looking at the map showing the distribution of this disease, prepared by the chief sanitary officer, it is seen that it prevails most in the Eighth, Seventh, and Fourth Districts; that is to say, the most unsanitary in the city, where paved streets are few and most houses damp, drafty, undrained and unsewered. That the bacillus abounds in our midst is unquestionable, but why should it so successfully attack such a large proportion of the population? I believe the chief reason is the prevalence of catarrhal affections of the respiratory passages, which lower the power of resistance and favor the reception and propagation of the germs, and that for the immediate cause of these catarrhal affections we must look to the damp, ill-drained, drafty houses, the want of flannel underwear and sufficient clothing in winter. The remedy suggests itself: to destroy the bacillus and prevent catarrhal affections, especially in persons of low resistance in unhygienic environment. What marked success has already been obtained in combating this dread disease in Havana will be stated further on.

To the same determining causes should be attributed the 322 cases of pneumonia occurring in 1899, and the 320 (5.24 per cent. of total mortality) in 1900.

Next to tuberculosis, *bowel complaints,* especially the *enteritis* of children, have produced the largest number of deaths. They also result from unsanitary conditions which are in a great measure removable. *Malaria* must likewise be counted one of the prevalent diseases, although many obscure affections are doubtless wrongly placed under that heading; in the light of our recent knowledge concerning its propagation, malaria must soon be shorn of its importance. *Diseases of the heart* are but too common: 629 cases in 1899, and 545 (9 per cent. of total mortality) in 1900. Under *arterial sclerosis* were reported 484 cases in 1899 and 357 (5.85 of total mortality) in 1900; what is exactly meant by this appellation as cause of death I am unable to ascertain, except that it covers much careless and ignorant diagnosis. *Cerebral meningitis* is frequent, 397 cases in 1899, and 403 (6.60 of total mortality) in 1900; I cannot help suspecting that certain diseases with strongly marked cerebral symptoms, especially yellow fever in children, as will again be adverted to, are herein included. *Typhoid fever* is comparatively uncommon: 240 cases in 1899 and 90 in 1900. From my experience I am led to think that Cubans are not prone to this disease; witness Santiago de Cuba with a

population of about 45,000 inhabitants and only seven deaths from it in 1900, although its water supply is widely open to pollution and the germs were brought and cultivated in abundance by American soldiers in 1898 and 1899. Havana, with its plentiful and pure water supply and its prospective excellent sewerage, will have nothing to fear from typhoid fever.

After this general review of the sanitary condition of Havana under Spanish régime, and as it still, to some extent, necessarily exists, let us now see what have been the results of the American occupation upon the health of the city.

The work of reconstruction and renovation by the Government of intervention began in Santiago immediately upon the surrender of that town on July 14, 1898; in Havana on January 1, 1899, and soon after in all the rest of Cuba. The sanitary condition of Havana at that time is more easily imagined than described; the work of scavengers had ceased for some time; patios, as well as streets, squares and wharves, were covered with garbage, refuse, dead animals and human filth; thousands were starving and all the hospitals crowded with uncared-for patients. The sanitary department had to be reorganized almost *de novo*. The chief sanitary officer and his subordinates entered upon their arduous work and pursued it throughout the year with great zeal and unflagging energy; the result was most gratifying, an ample compensation for all the labor and money spent. The year 1899, first of the intervention, the year which received the war legacy of disease, misery and disorganization, had a death-rate of only 33.67, practically the same as that of normal years (1890-1895). In 1898 the mean death-rate was 91.03; by the end of the year 1899 it had been reduced to 26.40, the mean of the year being, as already said, 33.67. Such figures demonstrate eloquently how quickly public health responds to intelligent and strenuous efforts to ameliorate the conditions upon which it depends. From 2,763 cases of tuberculosis in 1898, the number fell to 1,307 in 1899. Only 103 deaths from yellow fever occurred during the year. In the decade 1890-1899, the excess of deaths over births was 61,423, the number of births being less than one-half that of deaths (40,509 against 101,932); these figures cannot be considered accurate, the law requiring the reporting of births not always having been strictly observed, so that their number is probably understated; but after making due allowance it is probably safe to assert that the births were not over one-half of the deaths. The mean yearly excess of deaths over births was 6,142. During the year

1899 this excess was reduced to 3,972, and in 1900 was changed into an *excess of births over deaths by 651.*

It is, however, at the beginning of this year (1901), when the immediate effects of the war upon public health have passed away, and the many improvements instituted in 1899, and expanded in 1900 under the wise direction of Major W. C. Gorgas, chief sanitary officer, have operated long enough to bear fruit, that the full benefits of the American régime become evident. The statistics of the year 1900 are interesting and instructive in this respect. For the first time in many years there has been a natural increase of population by an excess of births over deaths, as above stated. The mortality of infants under two years, a very good index of the health of a city, was 1 in 4.13 of total mortality, apparently a better result than in English cities, the ratio for the whole of England (towns and country) being 1 in 4.76 (Ogle's life-table). The death-rate for the year is 24.40, having ranged from 29.04 in March to 21.31 in November. This rate has never been equaled, or even approached before, the nearest to it being 30.66 in 1893. It places Havana, in the scale of comparative mortality, above such cities as St. Petersburg, Moscow, New Orleans, Liverpool, Manchester and Dublin, according to their returns for 1899, but still too far below such cities as Chicago (14.6), Buenos Aires (17.1), Rome (17.4), New York (18.4), San Francisco (19.0), London (19.8), Paris (20.2).

The mean yearly mortality of the decade 1890-1899 is 10,243, which for two years would amount to 20,486; but the actual mortality for the two years of American occupation is only 14,255, so that the difference is a gain of 6,231 lives which can be credited to good administration and sanitary reforms. But fairer and more instructive, for purposes of comparison, is the result obtained by considering only the six normal, peaceful years, 1890-1895: the mean yearly mortality for this period was 7,206; if we deduct therefrom the mortality of 1900, which is 6,102, we obtain a difference of 1,104, representing the number of lives which have been saved through the efforts of the Government of intervention.

The reduction in the mortality of 1900 over previous years was mostly in the following diseases, which are those most readily affected by improved hygiene. First, tuberculosis; during the decade 1890-1899, the mean annual number of cases was 1,683, or 7.5 per 1,000 of the population; in 1899, the annual number was reduced to 1,307, or 5.39 per 1,000; in 1900 (population estimated at 250,000), the number fell to 851, or 3.40 per 1,000 of popula-

tion. a proportion smaller than that of Paris and Vienna, and clearly demonstrating that tuberculosis in Cuba is not due to peculiar, necessary conditions inherent in the climate, but, as everywhere else, is the result of poverty, ignorance and neglect. Enteritis dropped from 1,163 in 1899 to 560 in 1900; the map of its distribution, as prepared by the chief sanitary officer, shows that it prevails most in the Seventh, Eighth, and Fourth Districts; that is, in exactly those where tuberculosis is most frequent. Malaria fell from 822 to 344 and typhoid fever from 240 to 90. On the other hand, yellow fever, which caused only 103 deaths in 1899, was responsible for 310 in 1900, but, as explained further on, this disease is not directly affected by sanitation.

(*To be continued.*)

WOANDSU AN IDEAL FOOD.

Richard Guenther, consul general at Frankfort, Germany, in a recent report to the State Department, says:

"German papers speak of an annual plant growing in tropical Africa, belonging to the leguminous class, which is largely cultivated by the negroes as a food article. It has also been introduced to some extent in Southern Asia and in Brazil. It is called woandsu by the African negroes; the botanical name is *Glycine subterranca.*

"The French expert chemist of aliments has recently analyzed the fruit of the woandsu, with reference to its chemical composition and its value as food. The fruit, like the peanut, matures under ground. The eatable kernel has the shape of an egg, and is dark-red, with black stripes and a white hilum, like most beans. It furnishes a very white flour, whose flavor, after cooking, much resembles that of chestnuts. The chemical composition is 58 per cent. of starchy substance, 19 per cent. nitrogenous, 10 per cent. water, 6 per cent. oily, 4 per cent. cellulose substance, and 3 per cent. ashes. It will be seen that two pounds of these beans would supply the daily requirements of the human system.

"M. Balland, who has had wide experience in the chemistry of nutriments, calls this fruit the first one found by him in a natural state which shows all the chemical properties of a perfect nutriment."

THE UTILITARIAN PRINCIPLES OF TAXATION AND THEIR RELATION TO ALTRUISM.*

By R. S. GUERNSEY, of the New York Bar.

THE BURDENS OF TAXATION AND SERVITUDES THAT ARE UPON LAND AND REAL ESTATE.

The prevalent mode of the construction of streets and sewers in disregarding the charges and expense that should justly and properly be borne and paid for out of the public revenue, and not by the few property owners that now have to pay for them all, has not properly or deliberately been considered by legislators or writers on economics.

So long as the great burden of general taxation rests upon the assessed value of land and the structures upon it, so long will the importance of the cost and utility of those structures be more or less affected by it. When this burden is, in addition to others that are more oppressive and more exacting and unreasonable, unequally affecting individual rights of property of a few for the professed benefit of the many, it is very important to inquire into such conditions.

Whatever may be the feeling of the public at large as to the need of municipal economy, it is not expected to extend to local improvements that are to be paid for by only a few property owners.

We should bear in mind that all streets and sewers have been and are to be constructed at the private expense of a few, for public use, under the special direction and supervision of public officers. The preliminary surveys and maps prepared before any work is authorized or ordered done are usually at first at the general expense of the municipality. The owner of the property to be assessed for pay for the work has nothing to say about the plan or extent of the work, or its cost, or about the awarding the contract which is estimated by officials who then advertise specifications and accept bids for the construction; the property owners have nothing to say about the time or manner of performing the work, or the acceptance or rejection of it, or the compliance with the terms of the contract.

*Continued from page 523, vol. xlvi.

The expense of constructing sewers is much more unjust to local property owners than is any other tax charge.

When a sewer is built it has an opening to basins on each corner of the street, from which runs a culvert which connects each basin with the sewer in the middle of the street, for the purpose of surface drainage of the gutters and for draining the street; although this part of it is exclusively for public use, they are paid for by the private owners of the property when the cost of the construction of the sewer is assessed on them.

When the city of New York was to be laid out into new streets and avenues, under the plan which was adopted in 1811, it was provided by law, in 1813, that the assessment for opening, grading, regulating and paving a new street should only extend to the middle of the block on each side of the abutting property.

On a long line of street opening it might occur that some lots would be made much more valuable, relatively, than others by the whole improvement. Where a lot was assessed as of little value, relatively, before the improvement, it might be of much greater value because of the work. Experience proved that the improvements were very expensive to the abutting owners of lots where the limit of assessment was only half way to the next proposed street. So in 1840 it was provided by law that the assessment for street improvements should not exceed more than one-half the assessed value of the lot assessed. The law required that property should be assessed at its full value. This was a restriction upon the expenses in that kind of improvement. The courts, a few years ago, held that it only applied to a single local improvement, but that where there were several it would apply to each separately, and not in the aggregate. Hence, for a street opening a lot could be assessed for one-half its assessed value. The assessors the next year would increase the valuation because of that particular improvement. Then there would be another contract and assessment for grading and regulating. The next year, after it was done, the valuation would be increased accordingly; then a contract and assessment for a sewer, with the same proceeding in the latter case. After that would be a contract and assessment for paving, curbing and sidewalks. The limit of these two last assessments need not be more than one-half the last assessed valuation of the lot. But within the past few years, and at present, the law is that the assessment for the expenses shall be at only one-half the *fair valuation of the lot;* but it still only applies to each

separate kind of improvement, and under present laws it may be assessed at one-half its fair value at least five times; and that, too, in an arithmetical progression which may bring assessments at least five times its first value before the improvements, without limit as to how much further it may go.

The effect of this mode of having local improvements paid for by local owners of real estate has always proved very expensive to them and caused great dissatisfaction and often hardship and sometimes ruin to many. This has been more prominent in New York City and vicinity than elsewhere.

When any portion of the local improvement is paid for out of the municipal revenue, the area of assessment for benefits is more extended than if paid for entirely by the abutting and adjoining owners. The only limit to the extent is usually in the discretion of the commissioners authorized to make the assessments and awards. The practical effect of this is that in street improvements much property that is not benefited in any manner, because at a distance, has to help pay that which should be borne in part by the city because of professed economy in city government.

The law of 1895 (chapter 130), authorizing the construction of the grand boulevard and concourse in New York City, from the Harlem River north to Mosholu parkway, about five miles long and one hundred and eighty-two feet wide, with fifteen roads running transversely underneath, authorized the commissioners to assess one-fourth the cost of the acquiring the property therefor and cost of the construction thereof on the lands and tenements which the commissioners might deem benefited by the same, without being limited to the area of assessment therefor; the city to pay for the other three-fourths of the cost and to be deemed the owner thereof, the same as any other street. The cost will be about ten million dollars. The extent of the area of special assessments for benefits is about sixteen square miles. The city issues bonds for its portion, and the annual interest on them is paid out of the general revenue. The special assessments for benefits must be paid at one time by the property owners. There will probably be three or more special assessments at intervals of several years. The amount of these assessments is still limited to one-half the fair value of the lot assessed. The area of assessment is so wide that those that are near the work will greatly have the advantage of those at a distance.

In constructing all these public works the city issues special

assessment bonds and sells them; and out of the proceeds, payments to the contractors are made as they are agreed upon, and when the special assessments are collected from the property owners the bonds are paid off. They do not count against the constitutional debt limit of the city.

While the mode of making assessments on private property for local improvements in cities may be objectionable and unjust, the mode of collecting the assessments can and does greatly enhance the burden to the payers. No two cities have been exactly alike in this. The range has been in extremes from the collection of the assessment from the private local owner in advance before the work was commenced, and having it on deposit, drawing interest, until the contractor should become entitled to payments (this was so in Brooklyn before consolidation). In Kingston, N. Y., the city bonds were issued at long terms to be paid by general taxation and sold, and the proceeds paid to the contractor as the work progressed. In New York City for a few years prior to consolidation the city issued bonds and sold them, and with the proceeds paid the contractor. The few local owners on whose property the assessments were laid could, by option, pay off the assessments by twenty annual installments, the balance to draw interest at six per cent. In some cities these assessments can be paid in annual installments, the balance to draw interest until paid. The law for all the boroughs in New York is, now, that after sixty days the assessments draw interest at seven per cent. until paid, and they may run for three years after that; the comptroller can compel payment by the sale of the property by general advertisement.

Taxes for general municipal purposes and expenditures in cities are annual; but for assessments for local improvements may be levied at any time, several times a year; and several may be put on at once for different purposes. State and county taxes are collected yearly.

Taxes and assessments are liens on real estate, but the owner is not personally liable for them to the municipality; they can only be collected out of the property on which they are a charge.

After these local works are constructed and paid for by the abutting and adjoining property owners, they are deemed public property and are subject to legislative control. Adjoining owners have no more right to use them than has any person from Buffalo or New Jersey or Connecticut, or from any foreign country. They become United States mail routes—they have become

public property, although they are kept up and supported by taxes imposed upon the cost and value of these same improvements for which the present owner or his predecessors paid years ago, and although he has annually paid general taxes for the support of the city and State governments. The city expenses must be paid and must be collected from persons and property within its boundaries.

The municipal and State authorities allow private corporations to use and occupy the public streets for various monopolies, such as street railroads, telegraph, telephone, electric light lines, and for gas and heating pipes, and for water pipes and police and fire alarms, etc. Their use by private corporations are subject to the franchise tax, to be assessed by State officers, because under legislative control. The revenue that the city derives from this source by taxation is about four million dollars annually.

The mode of assessment and taxation for local improvements are the most prominent examples of taxation of the few for the benefit of the many. We hear little of it, because it only occurs to a few persons at once, and their voice is so feeble that it is lost in protest to the many, and the like wrongs are applied to a few more with the like result. The few are hushed by the assurance and feeling that the like cannot be applied to them again, and they care little for its effect when it is applied to others; thus all disregarding an altruistic principle that should prevail in the administration of municipal economy. Legislation is necessary to protect the few from abuses under it as the occasion arises.

All buildings and structures for public purposes are paid for by long-term bonds, and interest is payable by general taxation. Their construction and proximity are not deemed a benefit or injury to near-by property so as to authorize an assessment for benefits or an award for injuries.

Bridges are built at public expense by bond issues.

There are many special requirements relating to houses occupied by three or more separate families, in cities, that entail further expense on the owners of buildings. Many of them relate chiefly to the sanitary protection of those that, from choice or circumstances, prefer to dwell in places that afford low rent. Builders that pander to the demand for that class of property (and it is said to yield the best income) have to be sharply looked after by law for the welfare and protection of those who are helpless or careless of their own welfare.

Fire escapes must be provided by the owner on certain kinds of buildings, and fireproof window shutters and doors must be placed on specified buildings when required by the proper public officers. The first are for the protection of life, and the others are to prevent the spreading of fires.

Insurance against loss by fire is a voluntary servitude which is as regular as any enforced tax, and is always made by the owner and may be by tenants, more or less, in their discretion.

In calculating the rate of rent necessary to yield a fair profit on his investment, the landowner must take into consideration, among other things, the loss of rentals and the time of the probable vacancy of the property and expense of carrying it, and the cost of the attention necessary for it.

When all the local improvements demanded by the municipality on and about land are completed, it is deemed more marketable and fit for yielding increased revenue by rentals for various purposes. The owner and investor in that kind of property is not yet through paying for these improvements; he must continue to pay an annual tax on them all.

The owner and investor in real estate in cities must take all this into consideration in connection with the annual taxes that are imposed for general purposes. In New York City the rentals are calculated to yield at least ten per cent. on the investment to cover all expenses and net five per cent. The local taxes and servitudes require at least one-third of the annual rentals of the property to do this. This is of importance to rent-payers and all those employed by rent-payers.

When assessors value property for annual taxation after any one or more local improvements, the increased valuation is founded upon the cost of the improvements, whatever they are, and generally the valuation of some particular property, owing to its location, is increased much more than the cost for the improvements.

Improved real estate and the structures upon it are valued according to the actual amount of rent production. Unimproved real estate is valued according to its prospective rent production without the cost of improvements, whatever they may be. In assessing land for general taxation, its valuation and the structures thereon are valued flat; that is, there is no deduction for any mortgage, judgment or lien thereon, or any indebtedness of the owner, which are allowed on assessments of personal property.

When the bare land is to be taxed, its value should be estimated according to the profit of an appropriate structure upon it, less the cost of the structure. This is, in effect, the taxation of the "unearned increment," which Mill and some other writers lay so much stress on as belonging to the public. It can be seen that a tax rate of two and one-fourth per cent. on the land and the street and sewer construction, which the land paid for, will be a larger economic rent to the public than about six per cent. investment on the original land.

The actual unearned increment of land is its value in a condition before the hand of man has increased its utility by improvements on and about it, or added matters that render it of increased market value. The same is true of any other kind of property and material used or demanded by the needs and wants of man, whether in civilized or savage life.

Besides the taxation for city purposes on these valuations, the State tax for general purposes and for schools in other localities, and the canal tax, are applied by rate to these conditions of this kind of property.

It can readily be seen that all these improvements and local appliances would not be brought about voluntarily by those who have to bear the immediate expense of them. They must be and are left to some department of the city government to initiate and approve and proceed with, with the ultimate view of the greatest good to the greatest number of the citizens at large, now, as well as in the future. The progress of such work, by legislative requirements, exhibits the utilitarian motive as well as the altruistic effect that can be accomplished in social conditions. It is thus that streets and sewers are made in places in the suburbs that are not built up and not now used. Where their use is now required, or soon will be needed, streets should be at once constructed, so that buildings can be erected, and by increasing their supply thus help reduce the rents and induce the construction and growth of local industries and give employment near homes, thus saving the necessity, time and expense of transportation and traveling, to meet any of the numerous wants of a community. There is much room for further legislation to make tax burdens much lighter on real estate in such manner as will be more enticing to the capitalist and builders, and more economical and satisfactory to rent-payers in large cities.

(*Same subject to be continued.*)

COSMOPOLITAN HEALTH STUDIES.*

By F. L. Oswald, M. D.

Author of "Physical Education," "The Remedies of Nature," Etc.

II.—GERMANY.

The eight thousand victories of the Roman legions seemed to justify the belief that the destinies of the civilized universe would be permanently controlled by the natives of Western Italy and their southern allies, the Latin and Umbrian tribes of the Caucasian race.

The warrior-city on the Tiber did not doubt her ability to hold her own against all comers, but in the course of the century preceding the beginning of our chronological era the confidence of that hope was seriously shaken by the results of several encounters with the barbarians of the trans-Alpine woodlands. Two Roman armies that attempted to defend the fords of the lower Rhone were defeated in a manner more alarming than the most serious reverses of the campaign against the veteran cavalry of Hannibal. Without tactics, without defensive armor, with clumsy swords and still more primitive battle-axes, the shaggy invaders routed a detachment of fifteen legions and almost annihilated another, though the Roman commanders, in both cases, had the prestige of a long military experience.

"No skill of fence will avail against giants who can knock down through every parry" was the report of the survivors, and that experience was confirmed by the events of the battle of Vercellae, where the vanguard of the Teutons used leaping-poles to vault over the spears of the Roman battle front, and thus force the fight at close quarters. One of their war-chiefs, though handicapped by a panoply of ponderous weapons, could leap over eight horses, standing side by side, and walk erect under a burden equal to the weight of four full-grown men. In a campaign on the north side of the German Danube a Roman commander attempted to create a panic by turning loose half a hundred lions and driving them into the camp of the barbarians, but with an unexpected result: "They mistook them for dogs," says the Roman historian, "and knocked their brains out."

*Continued from page 532, vol. xlvi.

What combinations of political, religious and social despotism it must have taken to tame down that giant race to the generation of sluggards described in Madame de Stael's *Allemagne* and the philippics of Ludwig Boerne?—"law-abiding Philistines, twelve of them make a dozen, and if any one attacks them they will shriek for police protection."

"What makes that strange, snoring sound?" asked a tourist in the storm-swept defiles of the St. Gotthardt Pass.

"That? That's Germany sleeping," said one of his traveling companions; "snoring under the paternal government of one hundred and twenty-eight legitimate despots."

But it is hard to keep a stout race narcotized—as hard as to "keep down a good man," and the awakening came eighty years ago, when the athlete-patriot, Jahn, preached the gospel of physical regeneration.

Municipal Turner-leagues and private gymnastic associations sprang up by thousands; boys could be seen training on the public streets, and girls on garden lawns; horizontal bars sprouted in pleasure resorts, on the village green, in the recess yard of the metropolitan schoolhouse.

Government officials at first attempted to discourage the movement, with its alarming tendencies to a novel sort of enthusiasm; but the revival soon defied control. In less than ten years it spread from East Prussia to the Rhine, and from the Baltic to the Alps, with results which, before long, revealed its sanitary benefits. Round-shouldered schoolboys straightened out; the physical standard of recruits improved; prize-turners could be identified in any crowd by their elastic gait and their hale, self-reliant appearance.

That self-reliance was apt to manifest itself in other ways, not altogether convenient to the champions of feudalism, but, at the risk of such drawbacks, half a dozen German Governments decided to patronize the spirit they could not hope to repress. Physical training was made a branch of common-school education, and eventually of military drill, till the population of the entire Teuton confederacy had become a race of gymnasts.

A leaven of passive resistance remained, especially in the centres of beer-worship, and, by way of popularizing the Turner-bund, its leaders arranged frequent excursions to the woodlands and mountains, thus appealing to that *outing passion* that makes all Teutons kin. The descendants of the old, freeborn forest-dwellers still day-dream of greenwood sports as the nearest

possible approach to the recovery of our lost earthly paradise. Henry the Fowler, a sort of royal Robin Hood, is their favorite national hero, and Walter von der Vogelweide, with his anthems of nature-worship, their favorite minstrel.

That passion has evolved a number of words unknown to other languages: Wald-Einsamkeit (woodland solitude); Berg-Fex (a champion mountain climber); Sommer-Frische (a shady retreat from the midsummer misery of large cities). It has inspired folk-songs untranslatable in strongholds of bigotry. Witness the invocation of Allfather Wotan, and the hunter's declaration of independence:

"Nun kehr ith nimmer wieder
Ins graue Dorf herab;
Im Walde will ich leben,
Im wald grabt mir mein grab,
Wo mir des Pfarrer's kühe,
Nicht drauf zur weide gehn;
Das wild soll drüber springen,
Kein kreuz im wege stehn."

Its influence also manifests itself in the holiday excursions of city-dwellers and the pastimes of their youngsters. For one German schoolboy who would give a farthing for a Peruvian postage stamp, a hundred collect minerals, rare plants, birds' eggs (specimens; collectors mutually pledged never to rob the whole nest), and especially butterflies.

"Couldn't I sell you a little pitchwood?" asked a juvenile visitor of our Tennessee mountain camp.

"Got all we want, Buddy," said the naturalist of our party, "but, say, if you want to make a nickel, couldn't you catch us one of those big, swallow-tailed butterflies?"

No reply, or none but a stare of bewilderment.

"Those big, yellow butterflies," explained the entomologist. "Is it possible you have never noticed them? They swarm on every clover-field and you can tell them by their size and their double tails."

The young moonshiner scratched his tow head. "I'll tell you what's a fact, mister," he grinned; "I never took no stock in them bugs, and I declare, I didn't take notice if they got one tail or two tails."

Karl Schmidt would have needed no hint on those points. He would have known the haunts of the *Papilio Turnus* and all his

congeners, their habits, their breeding season and the favorite food plants of their caterpillars. Within half an hour after his return from afternoon school he can be seen roaming the fields with an implement which foreign tourists would be apt to mistake for a dip-net—a wire hoop with a long handle and a bag of mosquito gauze, designed to facilitate the capture of winged insects. His play-room swarms with pets. He rears young squirrels and dormice, wood-pigeons, starlings and bull-fishes, and the children of the Alps frequently peddle the surplus of their private menageries and sell trained marmots on terms not easy to resist; say, three francs for a wheel-turning pet, cage and all.

Young botanists, too, can be seen clambering about the cliffs of every mountain range, filling their drum-like herb-boxes with specimens rarely seen by pike-road travelers, and, like Henry Thoreau, developing a sort of instinct for guessing the *habitat* of every plant:

> Where in far fields the orchid grew;"
> "As if by secret sight he knew

and, incidentally, these little foragers gather a reserve store of health that helps them tide over the long winter season and the protracted confinement in often rather over-crowded schoolrooms.

A special phase of that outing penchant is the traveling passion of the Germanic nations, a proclivity by no means confined to the seafaring Anglo-Saxons. In point of persistence Humboldt's achievements were outdone by the Brothers Schlaginweit, and by Arminius Vambery, who, alone and afoot, crossed the Asiatic continent in all directions, camping in deserted villages and starving for days together to circumvent the frontier guards of eastern Thibet. It is an open secret that the German colonies in East Africa have never begun to pay expenses, but their subventions are voted by acclamation, to get a pretext for indulging the exploration penchant.

The sanitary results show to what degree outdoor exercise can prevail against the bane of dietetic transgressions; for the central position of the German empire seems to have afflicted its citizens with the stimulant habits and alimentary aberrations of all neighboring countries. They have adopted *schnapps* from Holland, coffee from France, tea and tobacco from Great Britain, sauerkraut from the Slavs and strong cheese from the herders of the Alps. "Pumpernickel"—sour rye bread, as black as turf, and

nearly as indigestible—was introduced from Denmark; red pepper (paprika) and its pungent compounds, from Hungary; but wurst appears to be an indigenous product, judging from the fact that every country derives the name of its Merry Andrew from its favorite national dish; Jack Pudding, Pickelherring (Holland), Jean Potage, Maccaroni and Polichinello, Hans Wurst.

"What is the noblest invention?" asked the instructor of a military evening school.

"Mett-wurst" (pork-sausage), shouted a Westphalian recruit.

"You can't be in earnest?"

"Braunschweiger" (a mixture of pork and beef), suggested one of his comrades.

And the quantitative transgressions of those sinners are hardly less grievous.

In addition to a liberal breakfast, dinner and supper, a German boarder demands a *zweites Frühstück* (second breakfast—a 10 a. m. luncheon, with a glass of beer) and a Vesper-brot (afternoon lunch); nay, Vienna burghers often add a nightcap of bread, wurst and ale, "for the stomach's sake."

Austria also produced the champion glutton of modern times, Jacob Koelnicker, a native of the Inn River valley, who had to be discharged from the army to obviate his werewolf raids on the commissary stores, and who, for a few years, supported himself by the proceeds of his gastronomic wagers and *schling wetten* ("devouring races") against time.

One of his Vienna exhibitors, tradition says, offered a bet that his man could eat a twenty-pound salmon trout in a single session, but took the precaution to serve the menu in twenty-eight courses, each dressed in a different manner and with different relishes of greens and spices.

"Say, if that big fish don't come soon, I'm not sure if I can manage it," said Jake Koelnicker, after finishing the twenty-fifth instalment.

The city library of Hesse Cassel preserves the oldest temperance document on record, a public pledge of ten conscience-stricken Hessian cavaliers to renounce the orgies of Bacchus, and limit their future potations to fourteen glasses of light country-wine per diem. Many modern beer drinkers would hesitate to accept a compromise of that sort; twenty "schooners" appears to be about the average stint of the regulars who frequent the lager resorts of Munich, but who are far surpassed by many Er-

langen students; not to mention the employees of the large breweries, where eight *mass* (nearly two gallons) *per hour* are doled to old-timers, with a slight deduction of wages for every gallon in excess of that portentous quantum.

It has, indeed, been conjectured that an instinct of self-preservation has driven the countrymen of Gambrinus into gymnastics and outdoor activity, since, in combination with physical indolence, their sins against temperance would be utterly ruinous.

The bracing influence of a cold climate, too, counteracts the tendency of dietetic excesses, and it is a suggestive fact that the land of the Turner-bund also originated the artificial refrigeration cures known as Hydropathy and the Kneipp System. For the principle of those rival plans of sanitary salvation is the same: The invigoration of the organism by the substitution of cold water for the cold air that enables a native of Labrador to survive a quart of raw brandy, with entremets of stale fish and whale blubber. Germany can also claim the honor to have inaugurated the crusade against the abuse of drugs and phlebotomy, and against all sorts of dress follies; the uniform of a German soldier is now a model of comfort and hygienic common sense, though as late as 1740 the Old Dessauer thought it necessary to screw up Prussian recruits in strait-jackets that made breathing difficult till daily exercise had somewhat loosened the tight seams.

The regulation dress of the Turner league comes still nearer the sanitary ideal: Loose-fitting linen trousers, ditto jacket, and a perfunctory cap, leaving the protection of the skull to its natural cover, an elastic waist belt, in lieu of lung-impeding suspenders, and a pair of wide, low-heeled shoes.

Sins of commission are proverbially hard to cure, but from those of omission the German reformers have redeemed their country in a way hardly surpassed in progressive America. Germany, in fact, is, par excellence, the land of fearless inquiry—that main condition of progress, and, according to Henry Buckle, of civilization itself—at least, in its most enterprising forms.

In that manner the enormous burden of dietetic transgressions has been outbalanced; the general *physique* of the German recruits is far above the average; the birthland of the Rome-conquering Teutons has again begun to turn out champion athletes; the era of industrialism has not filled German manufacturing towns with slum cripples. A densely populated country of less than 400,000 square miles has reforested its mountains and waste

fields till it can now again boast 80,000 square miles of woodlands, to 9,000 in France and 11,000 in Spain.

And intemperance itself has been abated, at least among the educated classes, by the increasing preference for healthier pastimes. The influence of business competition, too, has helped to eliminate habitual tipplers; there are thousands of German physicians, merchants and litterateurs who have become practical abstainers, simply because experience has convinced them that they cannot afford to carry the handicap of alcoholism.

Our German-American fellow-citizens have utilized their outing passion in the pioneer warfare against the perils of the wilderness; and weighing their Turner hails against their beer shops, their picnic groves against their *tabagies,* it can hardly be doubted that their influence has, on the whole, promoted the progress of sanitary reform.

(*To be continued.*)

VITAL STATISTICS AND REGULATIONS FOR THE DISPOSAL OF THE DEAD.

Illinois Law for the Registration of Vital Statistics, and Regulating the Disposal of the Dead.

An act requiring reports of births and deaths, and the recording of same; regulating the interment or other disposal of dead bodies, and prescribing a penalty for non-compliance with the provisions thereof, passed at the recent session of the Legislature of Illinois:

Section 1. It shall be the duty of every physician and midwife, in the State of Illinois who attends the birth of a child to report said birth within thirty days after its occurrence, to the county clerk of the county in which the birth takes place. Such reports shall be made on blank forms, to be prescribed and issued by the State Board of Health, and shall contain such information as may be directed by said board in resolutions, copies of which shall be printed on the reverse of the blank forms aforesaid. When no physician or midwife has been in attendance, then it shall be the duty of the parent, or in case of the disability of the parent, of the householder to make said report within the time and in the manner aforesaid.

Sec. 2. Every physician, midwife, parent or householder, who shall comply with the foregoing provisions shall receive for each report of birth made in the manner directed by the State Board of Health the sum of twenty-five cents. At the close of each quarter of the calendar year the county clerk shall certify to the country treasurer a list giving the number of births reported to him, and the names and addresses of the persons reporting the same, and payment therefor shall be made by the said county treasurer to the persons named in said list: *Provided,* That no duplicate report shall be paid for.

Sec. 3. No person shall inter, cremate, deposit in a vault or otherwise dispose of any human body, until he has received a permit to do so, as hereinafter provided, which permit shall bear date when issued, shall state the name of the deceased, the date and cause of death, the manner in which the body will be disposed of and the place of such disposal, the name of the person to whom the permit is issued, and the name of the attending physician, midwife or coroner, and shall be signed by the official by whom it is issued.

Sec. 4. The following persons shall issue permits for interment, cremation or other disposal of bodies of such persons as die within their respective jurisdiction, viz: County clerks in counties not under township organization; town clerks in counties under township organization, and the clerks of incorporated cities and villages: *Provided,* That in any county not under township organization, the Board of County Commissioners is hereby authorized to divide the county into districts, not exceeding six in number, and to appoint in each district an agent of said board of county commissioners who shall be empowered to issue such permits: *Provided further,* That the duties herein devolved upon city and village clerks may be performed, instead, by the clerk, secretary or registrar of a legally appointed city or village board of health: *And, provided further,* That neither county nor town clerks nor the district agents aforesaid, shall issue permits in cases of deaths which occur within the jurisdiction of incorporated cities or villages.

Sec. 5 No such permit shall be issued until there shall have been delivered to the proper official, as above designated, a certificate of death made in the manner directed, and on the blank form prescribed by the State Board of Health, by a legally qualified physician or midwife, or by the coroner of the county in which such death occurred.

Sec. 6. It shall be the duty of the physician or midwife last in attendance upon the deceased, if any there was, to sign the certificate hereinbefore required, stating the primary and secondary causes of death, according to the best information obtainable, and giving such correlative facts as may be required by the State Board of Health in resolutions, copies of which shall be printed on the reverse of said certificates. If there was no attending physician or midwife, or if the certificate of the attending physician or midwife cannot be obtained within forty-eight hours after death has occurred, the required certificate may be made by any legally qualified physician employed for the purpose.

Sec. 7. Any death coming under the supervision or direction of the coroner shall be by him reported to the district agent, the clerk of the county, township, village or city, in which the death occurred, or to the local board of health of such city or village, as the case may be, in the manner directed and on the blank forms prescribed by the State Board of Health, and it shall be the duty of the coroner to disinter any body buried without the permit hereinbefore required, and to hold an inquest on said body, and within three days thereafter to report said death in the manner aforesaid to the proper official.

Sec. 8. It shall be the duty of all district agents, township, city or village clerks, and clerks, secretaries or registrars of city or village boards of health to forward at the end of each month to the county clerk of the county in which such district, township, city or village is located, all certificates of death presented to them during the preceding thirty days.

Sec. 9. Every clerk of a township, city or village, or of a city or village board of health, every district agent and every clerk, secretary or registrar of a city or village board of health shall receive for each certificate of death forwarded to the county clerk, upon which a permit has been issued in compliance with the provisions of the foregoing sections of this act, a fee of twenty-five cents: *Provided,* That the city clerk or the clerk, secretary or registrar of the board of health of any city of fifteen thousand or more inhabitants shall receive no compensation other than his salary for any of the duties devolved upon him by any of the provisions of this act. At the close of each quarter of the calendar year, the county clerk shall certify to the county treasurer a list giving the number of certificates of death forwarded to him, and the names and addresses of the official so forwarding, and pay-

ment therefor shall be made by the county treasurer to the officials named in said list.

Sec. 10. The county clerk of each county shall record in the manner directed by the State Board of Health, all certificates of births and deaths delivered to him pursuant to law, and shall file such certificates in his office. The record of such certificates shall at all times be open to the inspection of the public without fee. Each county clerk shall also, during the first ten days of January, April, July and October of each year, render to the State Board of Health, in the manner directed by said board, a full and complete report of all births and deaths reported to him during the preceding quarter.

Sec. 11. The State Board of Health shall prepare such forms for certificates of births and deaths as it may deem proper, and shall deliver said forms to the county clerks of the several counties, whose duty it shall be to furnish such forms to physicians, midwives and coroners: *Provided,* That in cities and villages the local board of health or the city or village clerk, as the case may be, may prepare forms for certificates of death in form similar to those issued by the State Board of Health, and furnish the same to physicians and midwives.

Sec. 12. Any person or persons who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than ten nor more than one hundred dollars, or shall be imprisoned in the county jail not to exceed thirty days, or shall suffer both such fine and imprisonment in the discretion of the court.

Sec. 13. All fines collected under the provisions of this act shall be paid into the county treasury of the county in which the suit is brought, to be used for county purposes, and it shall be the duty of the State's attorney in the respective counties to prosecute all persons violating or refusing to obey the provisions of this act.

Sec. 14. All that part of Sections 4, 5 and 6 of an act entitled, "An act to create and establish a State Board of Health in the State of Illinois," approved May 28, 1877, relating to reports of births and deaths, and all acts or parts of acts in conflict with the provisions of this act, are hereby repealed.

Sec. 15. This act shall be in force on and after the first day of January, 1902.

THE METHOD OF EVOLUTION AND THE NEW THEORY OF HEREDITY.

From the "Literary Digest."

There are two very different questions connected with the problem of organic evolution, the question of fact and the question of method. If we conclude that present species have descended from earlier species, we must then endeavor to learn what laws and forces have been involved in the process. In a recent work on "The Method of Evolution," Prof. H. W. Conn, of Wesleyan University, tells us that there is very little disagreement over the first question among scientists to-day. Almost all biologists and geologists believe that our modern species of animals and plants have been derived from earlier species by descent. But while there is this unanimity upon the question of fact, it appears that upon the question of method there is to-day greater uncertainty of opinion and greater confusion than at any previous time. The latter, however, is, we are told, the really important and significant question. Says Professor Conn:

"If, therefore, we are to find the method of the origin of species, and thus explain organic evolution, we must discover some force or forces which may fill the place held by human intelligence in the designing of a piece of mechanism—the photographer's camera, for example. The laws of optics and physics no more explain the origin of the eye than they do the origin of the camera. Intelligence explains the adaptation of the parts in the one machine. What accounts for the same phenomena in the other? Every animal and plant is a complicated machine with many parts delicately adapted to act in harmony. Intelligence manipulates natural forces to build a steam engine. What directs these same forces to build the natural machine which we call the organism?"

One answer to this question was offered by Lamarck at the beginning of the present century. He advanced the theory that by use animals could strengthen any part and increase the size of that part. Conversely, if the part were not used, it would diminish in size and efficiency. He assumed that these effects were inherited by subsequent generations, and *use* and *disuse* became the great factors in producing the evolution of organs. A more comprehensive attempt was made to answer the question by Charles Darwin. Upon his theory, known now as that of natural

selection, is based all later discussion of the method of evolution. The theory is a chain of five links, each fundamental to it and lying at the bottom of all attempts to determine the method of evolution whether in accordance with the views of Darwin or with those of later scientists who have tried to solve the problem. These links are the Prodigality of Nature, or reproduction; The Struggle for Existence; Variation, or the impossibility of finding two individuals of any species that are exactly alike; the Survival of the Fittest; and Heredity. Of the laws and forces controlling each of these links (discussed at length in the book) those governing heredity have in recent years led to conclusions which are interesting and distinctly revolutionary. They are conceptions of a kind to greatly modify our ideas of morality. Many theories have been advanced to explain heredity, but the one that has made the greatest impression upon science is that suggested by Weismann in 1883:

"It consists essentially in the supposition that the basis of heredity is a material substance which is handed down from generation to generation, and which is named *germ plasm*. This material is carried from age to age in the reproductive organs of the individual. The individual is only the result of the unfolding of the potential powers of a bit of this germ plasm, and, once developed, he carries the rest of this precious material around with him to hand it down to his offspring. While in the individual, the germ plasm increases in amount, but he cannot change its character. It is entrusted to his keeping, but no peculiarities which he may develop can affect it, and hence acquired characters cannot be transmitted to his offspring. * * * The environment of the individual, since it affects the body but not the germ plasm, cannot affect inheritance, and hence plays no direct part in evolution. * * * Lastly, it is seen that this theory has especial effect upon our conception of *human* evolution, forcing us to assume that man, so far as concerns his innate character, is not advancing by civilization and education, and thus requiring a very considerable modification of our previous conception of man's relation to education and moral responsibilities."

The deductions arising from the acceptance of the Weismannian theory, and the full consequences of it, are startling. It is much more than a simple theory of heredity, since it involves the whole law of progress:

"Holmes has tersely expressed that belief in the oft-quoted expression that a child's education ought to begin one hundred years

before he is born. By this is, of course, meant that in order to produce a child with proper inherited characters, his parents must begin training for it, and even his grandparents; and unless they live the proper kind of life and become properly educated, the inheritance of the child will suffer. But plainly, in accordance with Weismannism, this does not follow at all. Such an education of the ancestors would simply produce in them certain acquired characters, and, since these are not inherited, this previous training would not in the least affect the child, except so far as it might cause the parents to lead a different kind of life and make them likely to give the child a better education. The child's education begins only *after* he is born, and the education of his parents has no effect upon the characters which they transmit to their offspring. * * * We have taught that if a man acquires an appetite for alcohol he is likely to transmit that appetite to his later-born children. But this again is a mistake, if this new theory of heredity is correct. An acquired appetite is an acquired character, and cannot be transmitted by heredity."

In still another line do we see this theory resulting in surprising conclusions. Most of us have tacitly assumed that civilization has elevated man, and that under its influence we are slowly but surely gaining, not only greater intelligence, but greater mental attributes.

"But here, too, we find that the new theory demands a complete modification of our views. Civilization and education are external and not internal, extrinsic and not intrinsic forces. * * * Civilization has changed man's surroundings, but has it changed the *man?* * * * Of course Sitting Bull was inferior to Lincoln. But if you could have given Sitting Bull the advantage of Lincoln and had required Lincoln to grow up in a savage community with only a savage education, who would venture to say that the intelligence of the Indian would not have shown forth as the statesman, while Lincoln would have been simply a savage chief? Was not the difference between them one of tools and opportunity rather than one of actual mental power? * * * In accordance with the new theory of heredity, it would be impossible to produce variations in the germ plasm which would give rise to larger brain power by simply training the brain of the individual who is carrying this germ plasm as a trustee for future generations. Nor would it make any difference whether you educated his brain for a single generation or for a thousand generations. If acquired characters are not inherited, no amount of

education could by any possible means affect the brain power of the offspring. If, therefore, the brain power of man has developed during the growth of civilization, this has been due to natural selection and not to the direct effect of civilization or education."

DRUNKENNESS AN ACQUIRED VICE—NOT HEREDITARY.

The "New Voice," June 6, reproduces, with comment, the following, in apparent ignorance of the concurrence of the report of the committee referred to with the recorded observations of physicians, who have had the best opportunities for accurate judgment from time immemorial. It has been the doctrine of THE SANITARIAN from its outset, and frequently reiterated for more than a quarter of a century:

The London "Lancet," in a current number, publishes a report of a special committee appointed by the British Society for the Study of Inebriety to investigate the relation of the appetite for alcoholic drinks to heredity. That committee, after eighteen months' supposedly careful and painstaking investigation, declares as its emphatic conviction that inebriety is impossible of transmission from parent to child. This conclusion, thus announced, has been the signal for widespread newspaper comment in the daily press, severely criticizing the temperance reformer for asserting contrary views, with evident eagerness and exultation. The "Lancet's" salient paragraphs, in its editorial résumé of the committee's report, are as follows:

"The committee was composed of five physicians, two surgeons, a professor of bacteriology, an army surgeon, and five general medical practitioners. Eighteen months have been spent in investigation. The report of this committee has just been published and it is signed by nine of the fourteen members, some of whom have made comments, while one has sent in an independent report.

"The report declares that the inebriety of an individual depends upon three conditions—the first being an inborn capacity for enjoying the sensations which alcohol produces, and the second and third being acquired—personal experiences of the pleasures of alcohol and the increased delight which continued indulgence confers in the case of the inebriate. That one drunken generation often

succeeds another suggests an hereditary taint. The committee adds that there is no evidence that acquired characters of any kind are heritable. This appears to have been a much-debated question.

"Popular opinion has taken for granted that the acquired characteristics of parents are likely to be inherited, and, of course, 'temperance reformers,' well-meaning, but often ignorant and misguided, have not been slow to urge upon the public that each man's drinking is pretty sure to produce for him a generation of children who will become drunkards. If this be not true, the temperance reformer (who is generally in favor of entire abstinence rather than of temperance) must bear a heavy responsibility for the vast amount of mental torture which he has inflicted on the moderate-drinking citizen.

"The last word of science, however, as declared by teachers of physiology, biology and botany, is a definite assertion that no instance of the hereditary transmission of an acquired characteristic has ever been demonstrated either in the animal or the vegetable kingdom. If this be a fact, a man can only transmit to his son the hereditary taint with which he was born, and if a man having no inborn tendency to excess yet acquires drunken habits, his progeny are in no more danger than those of his neighbor, leaving out of consideration the effect of environment on youth. It is not denied that drunken parents who become thus mentally and physically weak are liable to have children who are degenerate—weak in body and feeble in mind; such persons, in fact, as under unpropitious circumstances tend to become paupers, criminals, epileptics and drunkards. The point which is denied is that the drunkard's child has the specialized tendency to become inebriate rather than vicious in some other direction.

"Alcohol weeds out from every race the individuals who most enjoy and indulge in it. The races of southern Europe, who have had the longest experience of alcoholic drinks, are now more temperate than the British, the Scandinavians, and the Russians.

"The committee is of the opinion that the continued abuse of alcohol tends to render a race less innately prone to inebriety than it would otherwise have been, this result being brought about by the elimination of the drunken unfit and the survival of those with a weak tendency to alcoholism."

As typical illustrations of the comments of the daily press, the following expression appeared in the Chicago "Tribune":

"As applied to the subject of drunkenness, this verdict of the scientists must have a profound effect upon the moral questions in-

volved. Temperance reformers have always urged that each man's drinking tends to make his children drunkards. Science appears to be rendering this argument worthless. It is true that drunkenness often runs in families. This is accounted for partly by the influence of environment and example to which the child is exposed, and partly by the nervous temperament, which is heritable. The father can transmit to the son the taint with which he himself was born, but no amount of right living can decrease that taint and no amount of debauchery can increase it in the child. This is Weismannism, pure and simple, as it prevails at present in the world of science.

"The London experts do not deny, however, that drunkards are liable to have degenerate children. The point denied is that such children are any more likely to be drunkards than to show some other form of degeneracy.

"Dr. Keeley holds, in his book, 'The Non-Heredity of Inebriety,' that the strength of will acquired in resisting the temptation to drink is transmitted to the next generation, and that self-imposed abstinence would, in a few generations, put an end to the drink evil. Weismannism denies that this or any other acquired character can be transmitted. Thus the London scientists look for reform only through the elimination of the unfit. They say that alcohol, by killing its victims, weeds out of every nation the individuals who most enjoy it. Their conclusion by no means removes all incentives to temperance, but it destroys the argument that a drunken father is morally responsible for an inebriate son. The moralists and reformers will have to readjust their logic on this point."

The Chicago "Record-Herald" draws still more remarkable conclusions. It says:

"The drunkard can no longer lay his inebriety to bibulous ancestors. The man who drinks to excess cannot claim public indulgence on the theory that he inherited a taste for alcoholic stimulants from his parents. A craving for drink, in fact, cannot be transmitted from parents to children.

"If a man having no inborn tendency to excess, yet acquires drunken habits, his progeny are no more in danger than are those of his neighbor, says the report. The whole question of drunkenness is a matter of environment and an innate capacity to enjoy the exhilaration that comes from alcoholic indulgence. It is not denied that drunken parents who become thus mentally and physically weak are liable to have children weak in body and feeble in mind. But instances of inebriated fathers having sons who found no pleasure in alcoholic indulgence are numberless.

"If the conclusions of the society are accepted they relieve the ancestors of drunkards of a heavy responsibility and brush away the only claim which the inebriate appears to have upon public indulgence and sympathy."

Careful readers of the report as given in the "Lancet" will, in the very first place, be struck with a remarkable contradiction, in inference, if not in statement, of two of the conclusions. The report declares that the drunkard's child has no "specialized tendency to become inebriate rather than vicious in some other direction." In the next breath the assertion is made that "alcohol weeds out from every race the individuals who most enjoy and indulge in it." Whether or not the hereditary transmission of alcoholic appetite is fact or fiction, the effect of indulgence in it is admitted to be the annihilation of its victim, whoever he may be.

The startling assertion of the committee that inebriety is non-inheritable is practically nullified in its presumptive importance by the inevitable qualification, that it cannot "be denied that drunken parents, who become thus mentally and physically weak, are liable to have children who are degenerate—weak in body and feeble in mind."

The contention of the temperance reformer, in the ultimate, has always been that a drunken father was morally sure to leave the imprint of his degeneracy in his children's nature. Whether an actual craving for fire-water spurs on his offspring to the same degradation or not, the fact remains, overlooked by committee and press commentors, that the liquor curse stands at the portal of every vice that seduces human nature to-day, and whatever weakness of will or body or mind there is in an individual, that weakness is its easiest mark and allows the surest conquest of the unfortunate in question.

But the boasted "conclusion" of this "eighteen months" committee is not the only authoritative declaration upon the question under discussion, nor does it merely confirm the previous opinions of all great scientific authorities, as one commentor avers. There are many of the most distinguished authorities of Europe whose investigations have been as exhaustive as those of this committee, some of them very much more so, who openly assert that drunkenness and the craving for drink is positively and unquestionably hereditary. It is not, perhaps, a settled question. An alcoholic craving may not be transmitted, but the general effects of the drunkard upon his family remain as clear and as sorry a fact as ever.

TUBERCULOSIS—A RETROSPECT.*

By Heneage Gibbes, M. D., Delegate from the Detroit Academy of Medicine to the American Congress of Tuberculosis.

Looking back over the last twenty years at the varying conditions in our knowledge of tuberculosis, an interesting problem is presented to the thoughtful mind.

We are now in a transitional stage, and I am convinced that in a few years the views now held by a large majority of the medical profession will undergo some radical changes. The first statement made by a recent congress at Berlin, that "tuberculosis is a communicable disease due to Koch's tubercle bacillus acting on an organism prepared to receive it," is the keynote to the situation. Here is an admission that a primary morbid condition is necessary before the tubercle bacillus can produce the characteristic lesions.

First, as to this lesion, it was found necessary to establish the unity of phthisis, that the pathological picture presented by the disease should be entirely disregarded and the presence of the bacillus should be deemed sufficient to establish the diagnosis. In acute miliary tuberculosis the lesions occur in both lungs from apex to base. Dr. Klein and Prof. Hamilton had shown, before Koch discovered the tubercle bacillus, that these lesions were of two distinct forms, the one a new growth, the other a mass of inflammatory change. In 1882, in a paper read before the Medical Society of London, I showed that these two forms did not occur in the same lungs, and that the relation of the tubercle bacillus to them was entirely different. Since then I have never missed an opportunity to examine the lungs in this disease and have seen nothing to make me modify the opinion I then formed. Neither have I seen or heard of any work done on this subject, acute miliary tuberculosis, which disproves the position I took so long ago.

In regard to chronic tuberculosis and pulmonary phthisis, as they were formerly called, and now included under the head of tuberculosis, the question is a more complex one, owing to the difficulty experienced in getting an opportunity to examine the initial lesions.

But an important fact has been demonstrated by numerous observers in different parts of the world, in such a manner and by men so well known that it cannot be disputed, and that is, that

*Read at the American Congress of Tuberculosis, May 15-16, 1901. From advance sheets of Bulletin.

cases occur in which the clinical diagnosis is one of tuberculosis and yet no tubercle bacilli can be found in the sputum, while after death the lungs are found to be full of cavities, neither the walls of which nor the contained pus have any tubercle bacilli in them.

This condition is explained in various ways by some of the latest writers; but, after all, their explanations are merely theoretical.

I made a number of experiments to try and throw some light on this condition. I obtained pus from various sources, which were, so far as it was possible to ascertain, non-tubercular and which subsequent cultures proved to be so. With this I inoculated a number of animals, mostly guinea pigs, without producing any tubercular lesion. I also inoculated susceptible animals with caseous material from human cases of tuberculosis where extended observation had failed to show any tubercle bacilli in the sputum during life, or in the lungs after death. In every case the inoculated animals died after the usual time had elapsed, with all the tubercular conditions found in the same animals (guinea pigs) when inoculated with tubercular material, but in no case were there any tubercle bacilli to be found in the lesions after death. Other observers have obtained similar results.

The tubercle bacillus, as we first knew it on Koch's discovery in 1882, was supposed to have certain characteristics which gave it an almost unique position.

First: Its reaction to staining agents; the only other bacillus with the same reaction at that time was that of leprosy. Now we have the smegma bacillus, and others found in timothy grass and in the droppings of domestic cattle. I have found bacilli in the liver of the rhea, the South American ostrich, and in cold-blooded animals, such as the Indian python and boas. I have also recently found in the sputum from three tubercular cases a large bacillus having the same reaction, but differing morphologically from that of tuberculosis.

Secondly: It was considered to be a bona-fide parasite, as it would only grow at the temperature of the human body. I have numerous cultures growing luxuriantly, which have never known any heat beyond that of an ordinary room. This has been abundantly proved by other observers.

There have been numerous observations made all over the world which show that, as I said before, we are in a transitional state as regards tuberculosis.

Every year adds to the number of qualified men who do not agree with the present views.

Haeppe, professor of hygiene in the University of Prague, says: "I have arrived at the definite opinion that the tubercle bacillus is the parasitic growth form of a pleomorphic mould and is not a true bacterium at all, but in respect to its morphology is closely related to the ray fungus."

A number of other observers have expressed their opinions as being antagonistic to the doctrine of Koch and his followers, and I think Dr. C. F. McClintock, in a paper read at the annual meeting of the Michigan State Medical Society last year, has put the matter very happily. He says: "In the laboratory we find the germ rather exacting in its food requirements, and I am inclined to believe that we shall eventually find some certain chemical constitution of tissue—a diathesis, if you please—is essential in the production of tuberculosis; that back of the tubercle germ lies the essential cause of tuberculosis."

The Berlin Congress decided that heredity played but a small part in the production of tuberculosis. This is an improvement on the condition existing a few years ago, when the influence of heredity was denied entirely by many bacteriologists. We have to go not so very far back to find tuberculosis given as the absolute proof of the heredity of disease, and this by men of vast clinical experience. Were they all wrong in their deductions from their own experience and careful observation of cases with which they were thoroughly familiar? Of one thing I feel sure, and that is, we shall have to separate the cavitation in the lungs following broncho-pneumonia from that produced by the breaking down of tubercular lesions; and, pertinent to this, has any one seen a case of tubercular laryngitis occurring in the course of a breaking down of the lung tissue in broncho-pneumonia? I mean where the conditions were verified by microscopical examination post-mortem. Whatever may be the cause of consumption, we have to face a very present evil and one which the community at large is getting keenly alive to, and some radical measures will have to be adopted. I do not believe that the establishment of consumption hospitals or sanitaria in such a climate as that of Michigan would be of the slightest use. It would be simply herding the affected and concentrating the disease. The expense would be so great that all the people suffering from the disease could not be included, and the only possible good would be from withdrawing all those affected from contact with their fellows. As a matter of fact, consumption is one of the most easily handled diseases we have to cope with, as far as infection is concerned. There are two

conditions which would, in the course of time, stamp out the disease. Take the health of the people out of the hands of the politicians, and take as much care in mating human beings as you do with blooded stock.

TUBERCULOSIS.*

By E. Mather, M. D., Ph. D., Etc., Birmingham Sanitarium, Birmingham, Mich.

1. Tuberculosis is in all respects infectious, and a curable disease and one capable of restriction.

2. That the State here, in Michigan, compels registration of every case of tubercular disease, and every other State should compel same.

3. Those affected with tuberculosis should receive circulars of information as to the nature, communicability and sanitary care of patients, and instructing those attending them.

4. That instructions be given to the parties in charge of the patient, about keeping dogs, for dogs will lick up all expectoration about the premises. The State should therefore examine all pet animals.

5. The instructions should be given on all subjects on various animals and chickens, ducks, for these all pick up the various articles as well as expectoration.

6. That the proper instructions as to the nature of contagious and infectious diseases, and also the practical methods of their control, should be given to all senior pupils in public grammar schools and other buildings.

7. Also all owners, managers, trustees of public places and of entertainments, including schools, churches.

8. That all public carriers and men in public life should be required to prevent contamination in any public building, halls and conveyances, and to see and enforce disinfection of them.

9. That the hopelessly ignorant, wilfully careless and vicious, affected with tuberculosis, should be properly isolated in sanitariums, hospitals, or tents, provided by the State, by persons qualified for such cases.

10. That the climate for such cases is a consideration. We will take the climate of Northern Wisconsin such as to be recommended

*Read at the American Congress of Tuberculosis, May 15-16, 1901. From advance sheets of Bulletin.

for phthisical patients, for its pure air, due to its frequent showers, and at the same time mostly dry, because the sun is always shining; immediately after a shower, very hot. Again, the air is laden with the fragrance of the woods.

These cases should be sent out of our large cities into open-air places, open tents. Open tent life will improve their health; also good water and pure air.

BOSTON MEDICAL LIBRARY JUN 23 1902

11. That all parties known to be suffering from tuberculosis should notify physician or health officer of their removal to another State or city, and premises should be seen and disinfected with all care.

MEDICAL EXCERPT.

By T. P. Corbally, A. M., M. D.

Scrofula, Its Origin and Treatment.—M. Hacks of Fécamp presented to the Académie de Médecine ("Gazette Hebdomadaire," May 19, 1901) a very interesting and original communication on the etiology and treatment of scrofula.

"From 1,000 cases of scrofula which I have had occasion to observe," said M. Hacks, "I have been able to form some definite conclusions relative to the nature of this affection.

"I should say at first that scrofula has no relation whatever to tuberculosis, and that it should not be considered as a tubercular affection, the virulence of which has been modified; the same remarks apply to syphilis. When one of these diseases is developed in a subject said to be affected with scrofula, the scrofula gives place to that disease and disappears; there is, then, no such disease as syphilo-scrofula, nor scrofulo-tuberculosis.

"I think we should really regard scrofula as the first stage of *infections superficielles,* cutaneous or mucous, and this applies to all ages and conditions in the life of the individual. The infecting agents in these infectious diseases are: in the first place the streptococcus, then the staphylococcus, finally the calibacillus.

"The most general form of the complex condition known as scrofula is impetigo, found in 90 per cent. of all the cases; then the disease is manifested under other lesions, either of the skin or of the mucous surfaces, as herpes, ecthyma, or by reflex phenomena —local, as œdema, erythema, erysipelas; different exudations, as coryza, conjunctivitis, otitis; and regional, as hypertrophy, glandu-

lar affections, or general, as lymphocytosis. It is therefore a great mistake to consider scrofula as a general disease, *totius substantiæ*—as a dyscrasia or a diathesis.

"However, in order that these microbes which normally live inactive in the tegument may acquire a pathogenic character, they need a favorable condition; this condition is the local asphyxia of the skin.

"It is known that the skin performs a respiratory function, and that there is a cutaneous respiratory hematosis; it is in this 'poumon cutané,' cutaneous lung, that the offending micro-organisms live, and their virulence is there attenuated by the oxygenized medium in which they are placed; oxygenized *intus* in the blood; oxygenized extra in the atmospheric air. But in order that this location become vitiated by the presence of oxide of carbon, carbonic acid must be present, and then the microbes immediately become virulent. That is especially the case in winter, from want of exercise in the open air. This situation explains why the conditions favorable to scrofula are observed especially in cold regions and during a prolonged period of cold and severe weather.

"It follows that the treatment of scrofula requires the resolute employment and the systematic use of oxygen in summer as in winter. Against reflex conditions two medicines are useful, iodine and tannin."

TUBERCULOSIS AND NUTRITION.—M. Monfet has exposed to the Académie de Médecine et de Chirurgie Pratiques ("Gazette Hebdomadaire," May 5, 1901) the deplorable consequences of the heavy tax imposed by the Government on articles of food in France.

"If the deaths from tuberculosis in France and England be compared, it is found that England, with a damp, cold climate, loses every year but 50,000 people from tuberculosis, while France, with a much healthier climate, loses 150,000 every year in an equal population.

"To what cause can this enormous difference be attributed?

"In a journey through England I was impressed with the quantity and the nutritive value of the food used at each meal by the Englishman, no matter to what class or condition he belonged. Wishing to establish the amount of their nutrition, I analyzed the urine of ten workmen of medium size, makers of mirrors in England. On my return to Paris I made the same investigation of ten French workmen, also makers of mirrors. The record of my analysis shows that the quantity of the matter eliminated by the

English was much the greater. In the French the difference was principally in the phosphates and the sulphates. The relation of the nitrogen to the mineral elements shows for the French a deficit of the mineral elements. But it is known that the tubercular constitution is a system demineralized.

"Then, the English workman is well nourished, the Frenchman is insufficiently and badly nourished; he craves alcohol to give him a fictitious strength. The wages paid in both countries are about the same, but in England the necessaries of life are incomparably cheaper, because the Government duties on the necessaries of life in England are moderate and principally on luxuries, while in France they are excessive on the necessaries of existence.

"Of all the nations of the world France holds the first place for deaths from tuberculosis, for the use of alcoholic drinks and for depopulation, and that, in my opinion, is because the Government duties are murderous.

"Under such conditions, of what use would sanatoriums be to the people? Even if all the tuberculous subjects were dismissed cured—perfectly cured—from the health establishments, they would be again liable to contract tuberculosis from the same cause.

"The only remedy is to remove the duties now on the necessaries of life, and place higher duties on superfluous articles. This is the duty of our legislators; it is worth a trial."

To Prevent Tuberculosis.—MM. Lemoine and Carriere, of Lille, discussed before the Académie de Médecine the different means proposed for its destruction ("Le Progrés Médical," May 4, 1901). They attach a much greater importance to prophylactic measures than to direct personal treatment, particularly to treatment in sanatoriums. However, they warmly encourage the methods proposed recently by M. Brunon, to organize in every neighborhood small establishments of moderate cost, selecting such places as can be readily made available for these purposes: 1. the application and proper enforcement of all the laws which have for their object the health of cities, the sanitary condition of houses in the city as in the country, the supervision of factories, of articles of food, and, as regards health, the regulation of labor; 2. the effective intervention of the State in the struggle against alcoholism which is so frequently the cause of tuberculosis, by the enactment and enforcement of proper corrective measures; 3. the isolation in hospitals of patients affected with pulmonary tuberculosis; 4. the efficiency of sanatoriums being in no way demonstrated,

the necessity of employing the money which we might desire to devote to their support to the organization of other hygienic measures and the improvement and extension of measures already in existence, as the formation of benevolent societies for the granting of medical aid for the suffering poor, who should be cared for the moment they become helpless; 5. a proper provision for the sick, so arranged as to accommodate those who have some means at their disposal as well as the indigent poor.

MYOCARDIAL RHEUMATISM.—M. Merklen stated to the Société Médicale des Hôpitaux that at the time of convalescence from acute articular rheumatism ("Le Progrés Médical," April 27, 1901) there exist very frequently signs of insufficiency in the heart (dyspnea, palpitation, etc.) These signs are manifested when the patient arises and begins to make some exertion. Even during the course of the disease a systolic interruption is frequently observed.

AUTOMATIC SAFETY-VALVE STOPPER—A DEVICE PREVENTING THE BURSTING OF PEROXIDE OF HYDROGEN BOTTLES.—The great trouble with peroxide preparations is that, if the containers are tightly corked, the oxygen which separates and is set free, slowly but constantly as time passes, accumulates, until the bottles can no longer stand the pressure and burst, or the corks are driven out. Of the two alternatives, the bursting of the bottles is the more objectionable feature on account of the danger attached to it.

a

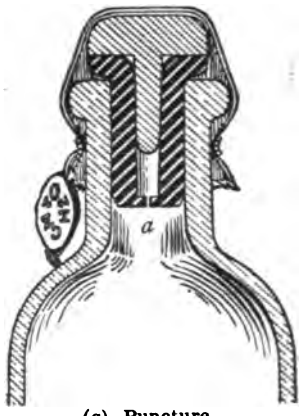
(a) Puncture. Cut No. 1. Illustrates the cross section of the safety valve rubber cork, showing the wooden top and the puncture at bottom. A thin strip of paraffined paper is insertserted into the puncture.

Containers of the hydrogen peroxide, U. S. P., which is a comparatively weak solution of H_2O_2, yielding but 10 volumes of oxygen, may be closed with a wooden stopper, which, by the porous nature of the material, permits the escape of the gas almost as soon as it is set free, thus avoiding explosion and rupture of the bottles or the driving out of the corks.

While these wooden stoppers answer very well for solutions of H_2O_2 responding to 10 volumes of oxygen or less, with stronger solutions, such, for instance as Marchand's peroxide of hydrogen medicinal (15 volumes), or his hydrozone (30 volumes of oxygen), they are quickly attacked by the solutions, as are also the ordinary corks, and within four months are completely oxidized, not merely bleached, but rendered so soft that they cut like

pot-cheese. From that time the goods are unfit for sale.

In order to prevent these difficulties, and especially to obviate the bursting of the bottles containing hydrozone, Mr. Marchand, the manufacturer of that article and other well-known brands of peroxide of hydrogen, has devised an ingenious stopper, which he calls the "automatic safety valve rubber cork," and which is shown in the illustration.



(*a*) Puncture.

Cut No. 2. Illustrates the cross section of a bottle corked and capped with vegetable parchment and paraffined muslin; no wire.

The material of the stopper is vulcanized rubber. The beveled end is punctured through in such a manner that when the pressure in the bottle rises above 5 to 8 pounds to the square inch (according to the thickness of the rubber at the bottom, which may vary slightly), the excess of free oxygen finds free egress and thus relieves the tension.

Cut No. 3. Illustrates the top of the bottle with the seal.

This device is first inserted, and a plug of porous wood is then driven in, thus stiffening the rubber and completing the operation of "corking."

The capping consists of vegetable parchment covered with paraffined muslin, no wiring being used or needed.

It is easily seen that this style of closing the bottle obviates the possibility of bursting. Assuming even that, through some imperfection of the stopper, the puncture should close, as soon as the pressure rises to a point far within that required for rupture of the bottle, the stopper, not being wired down, will yield and be forced out.

Retail druggists, who have for so many years been the chief sufferers and losers from the bursting of the peroxide containers, and the deterioration of the substance otherwise from the causes indicated above, will welcome Mr. Marchand's invention as a happy solution of what has to them been a very serious problem in the

past, since it will enable them to supply their trade with the higher solutions of hydrogen peroxide, and especially that preparation of Marchand's for which the stopper was particularly designed, "hydrozone," which carries 30 volumes of oxygen.

The device described above—the automatic safety-valve stopper—having entirely obviated the danger arising from the explosion of bottles in handling, there is certain to be a largely increased demand for Marchand's concentrated solutions of the peroxide of hydrogen (which alone will be corked with the patented stopper), since physicians anxious to obtain quick results will never prescribe anything but the most active solutions, or those richest in active oxygen, and since druggists will be protected absolutely against loss by deterioration or explosion. The medical profession is being thoroughly advised of Mr. Marchand's new method of closing his bottles of "peroxide of hydrogen medicinal" and "hydrozone," and will be certain to avail themselves of the advantages thus guaranteed them.—April, 1901, issue of "National Druggist of St. Louis."

NOTE.—Remember there is no popping when corks are removed.

GOUT AND ARTHRITISM.—M. Morel-Lavallée has ("Progrés Médical"), contrary to the general opinion, found in gouty subjects a hyperacidity of the fluids—12 times in 13 cases. This fact, indicating the usual alkaline medication, is of great therapeutic importance.

LEPROSY AND ICHTHYOL.—M. de Buin ("Progrés Médical," April 27, 1901) has obtained excellent results from the use of ichthyol internally in tubercular leprosy. The effects are much less efficient in nervous leprosy. In the former the dose, one gram a day, is sufficient. In the latter five grams may be given with safety. A patient afflicted with anesthesic leprosy took this latter dose from the beginning of treatment without the slightest inconvenience.

AN OLD-TIME PHYSICIAN ON THE PROPERTIES OF COFFEE.

M. Louis Lemery, "Regent Doctor of the Faculty of Physick at Paris," who lived in the first years of the eighteenth century, in a treatise he wrote upon foods, the "Medical Record" says, has this to say of the properties of coffee: "It fortifies the stomach and brain, promotes digestion, allays the headache, suppresses the

fumes caused by wine or other liquors, promotes urine and women's terms, opens some people's bodies, makes the memory and fancy more quick, and people that drink it brisk. It agrees, when moderately taken, especially in cold weather, with old people; with such as are phlegmatic, and those who are fat and corpulent; but 'tis not so proper for bilious and melancholy persons. The use of coffee to excess is at least as pernicious as the moderate use of it is wholesome to many persons. Many persons that have been used to drink too much coffee become infirm and paralytic, as Willis and other physicians have observed."

DANGER IN HOUSEHOLD PETS.

Dr. Martin Friedrich, of Cleveland, the expert in small-pox cases employed by the city, says that dogs and cats help spread the disease and that the sooner they are killed off the better it will be for the health of the people.

"I suppose I will be regarded as cruel and inhuman by advocating such a step as this," said Dr. Friedrich yesterday, "but the people will find that it must be done before we get rid of small-pox. This is especially true in the plague-stricken districts, where many people apparently care more for their dogs than for their children.

"Any one who has not seen how some of those people live can scarcely comprehend the danger from dogs and cats. They spread the disease more than human beings do. When a new case of small-pox is discovered, the victim is hurried off to a hospital, the other occupants of the house are vaccinated, and the house quarantined, but the dogs and cats are permitted to come and go as they choose.

"I recently discovered a case of small-pox on Canal Street, in a house in which several families were living. I did not attempt to count the number of children that were playing about the house and yard, all of them in filth. It would have been even more futile to have attempted to count the dogs and cats, and I must say they looked better fed than the children. The dogs were the children's pets. The children rolled in the dirt with them, kissed them and hugged them. The children had been exposed to small-pox. They were immediately vaccinated and kept under guard. The children, however, went to play with the neighboring dogs, and the neighboring dogs, in turn, were hugged and kissed by the children who owned them. Now, what chance is there to keep the disease from spreading under such circumstances?"

A NEW INSTITUTION FOR MEDICAL RESEARCH.

An enterprise of extraordinary value and promise which will do much to further preventive medicine in this country is initiated, by a corporation (Rockefeller Institute for Medical Research), with a gift of $200,000 from Mr. John D. Rockefeller. Its headquarters will be in New York City. The object of this new creation is to furnish facilities for original study of medical problems, bearing more especially on those questions whose answer should be of practical application in the prophylaxis and treatment of disease. Judging from what has thus far been published, it seems probable that particular emphasis will be laid upon the prophylactic side, which, after all, is the most logical aim of practical medical research; and, with this view in mind, it has already been suggested that one of the problems whose solution would for the present prove of even greater benefit to humanity than many other studies, is the relation of milk-supply to gastro-enteric maladies of children. Experiments will be made in the laboratories of several leading universities, and one person will be sent to Europe to report upon the results of similar studies there.

But this represents only a similar feature of the plan in view. Definite problems will be taken up, and as the work develops, doubtless a permanent staff of competent workers will be organized, and a large field cultivated.

The board of management as at present constituted is as follows: President, William H. Welch, M. D., Baltimore; Vice-President, T. Mitchell Prudden, M. D., New York; Secretary, L. Emmett Holt, M. D., New York; Treasurer, C. A. Herter, M. D., New York; members, Theobald Smith, M. D., Boston; Simon Flexner, M. D., Philadelphia; H. M. Biggs, M. D., New York.

The potential value of an institution of this kind, and under such auspices, to medical science and to the interests of humanity can hardly be over-estimated.

CHRISTIAN SCIENCE AND THE LAW.—We cannot see that there is any flaw in the argument from the New York "Times" that "if we make laws to protect the public against spurious butter, why not make or enforce laws against spurious doctors? A quack is not less dangerous because he takes the name of the Saviour to hide his ignorance and cover his homicides." Certainly a man it not allowed to sell gunpowder, dynamite and other explosives without a license; why should he, as a Christian or as a scientist, be permitted to distribute infection gratuitiously?—Buffalo "Commercial."

CLARK BELL, ESQ., LL. D.

EDITOR'S TABLE.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton St eet, Brooklyn, N. Y.

SANITARIAN, JULY, 1901.

THE AMERICAN CONGRESS OF TUBERCULOSIS.

CLARK BELL, ESQ., LL. D., whose portrait embellishes the opposite page, the founder of the New York Medico-Legal Society, editor and proprietor of the "Medico-Legal Journal," and the projector of the American Congress of Tuberculosis, is no stranger to the older readers of THE SANITARIAN, for during the early years of the Medico-Legal Society, some twenty years ago, THE SANITARIAN published its proceedings, to which Mr. Bell, as the leading spirit of the organization, was a frequent contributor. And under his leadership the Society was not long in so extending its field of view as to recognize the need of a distinctive journal for its proceedings. This need Mr. Bell was the first to perceive and to establish. And he has conducted it with such characteristic vigor and pioneership in the discussion of medico-legal questions and reformatory measures in medical jurisprudence as to have enlisted the co-operation of both professions insomuch in this regard as to have brought about the most signal co-operative effort for the prevention of tuberculosis ever before effected in this country.

The congress was too late in the month, May 15-17th, for more than the publication of the presidential address, and the address of welcome by Clark Bell, Esq., president of the Medico-Legal Society, the projector of the congress, and the names of the officers, in our June number.

The congress was extensively representative. It was constituted of accredited delegates by the Governors, State and local medical societies of almost every State and Territory of the United States, Mexico, Canada, the South American nationalities and several European, for the most part of physicians, but some foreign consuls, here resident, designated by their respective governments, and other distinguished men of affairs, together with the lawyers and others of the Medico-Legal Society. In all, nearly two hundred, about half of whom were present, and a number of those who could not be contributed papers. The papers and discussions were of wide range, as contemplated in the plan of the congress from the outset.

Based upon accepted knowledge that tuberculosis is a contagious and preventable disease, the medical profession of all countries were invited to contribute papers to be read in their behalf

by a committee selected for that purpose, in case of the inability of the authors to attend, and to enable those who could not hope or expect to be present to participate in the work and usefulness of the body.

As the questions to be discussed involved remedial legislation, legislators, lawyers, judges and all publicists who take an interest in the subject, "The Prevention of Tuberculosis," as announced, yet the "Boston Medical and Surgical Journal" of May 23d, while recognizing the announcement, imputed and implied an additional purpose to suit its self-satisfied knowledge and asperse the proceedings: "It cannot be said, however, that the cause of scientific medicine was advanced to any appreciable extent by the meeting"--or undertaken. "No discrimination, whatever, seems to have been shown in the selection of papers, so that the time of the convention was largely taken up by cranks and by those with axes to grind in the shape of self-lauded special methods of treatment."

That this aspersion may be the more evident, attention is invited to a partial list of the papers, with the names of their authors, in the order of presentation, appended; and to some of the papers read, on other pages. More will follow hereafter.

H. D. Holton, M. D., Secretary of the State Board of Health of Vermont, on taking the chair at the opening of the afternoon session of the first day, made a brief address. He thanked the congress for the honor conferred by selecting him to preside over the deliberations, and said:

"You are here for a great philanthropic purpose. Tuberculosis for a long period stood at the head as a cause of mortality, and is only second now, in some localities, to pneumonia. It is for you, in connection with the Medico-Legal Society of New York, to consider what legislation can properly be asked for that will prevent its spread, and to discuss other means of arresting its progress. Without further delay we will proceed with the work of the congress."

On motion, the congress proceeded to the reading of papers as named on the programme:

Clark Bell, Esq., LL. D., of New York, read a paper on "Tuberculosis and Legislation."

Paper by ex-Judge Abram H. Dailey, of Brooklyn, "Medical Legislation from a Legal Standpoint."

Dr. C. F. Ulrich, of Wheeling, W. Va., "Suggestions for the Prevention of Tuberculosis from Personal Observation."

Louis J. Rosenbergh, Esq., of Detroit, "Legal Action to Prevent the Spread of Tuberculosis."

Dr. William Bayard, of St. John, N. B., "The Prevention of Tuberculosis."

Dr. Edward Liceaga, President of the Board of Health of Mexico, City of Mexico, "The Prevention of Tuberculosis."

Prof. Schrotter, of Vienna, "Contribution to the Cure of Tuberculosis in Sanatoria."

Dr. W. S. Bullard, of Columbia, Ga., "The Treatment of Consumption."

Dr. Geo. W. Brown, of Atlanta, Ga., "Treatment of Tuberculosis."

Prof. Thos. Bassett Keyes, M. D., of Chicago, "Camp and Outdoor Life in Northern Wisconsin."

Dr. P. H. Dunlap, Battle Creek, Mich., "Vapor Massage in the Prevention and Cure of Tuberculosis."

Dr. J. L. Hatch, of New York City, "Clinical Report of Cases under Dr. Crotte's Treatment."

Dr. J. F. Labadie, of New York, "Treatment by Static Electricity."

Dr. A. E. Aronstam, of Detroit, Mich., "A Plea for Stricter Attention to Tuberculosis."

Carleton Simon, M. D., of New York, "The Case of Hammenn."

Capt. Upper, U. S. A., in charge of Hospital for Consumptives, Fort Bayard, New Mexico, "Prevention of Tuberculosis."

A. A. Jakoby, Esq., of New York, "Prevention of Tuberculosis." These were read by title at the request of the authors, to enable them to be completed later, in time for the Bulletin.

On reading of the paper by Dr. Carleton Simon, on "The Case of Hammenn," the paper was discussed by Dr. C. C. Carroll, of New York, Dr. J. Mount Bleyer and others. Dr. Simon closed the debate.

The following papers were read by title, the authors not being present:

J. A. Fortich, M. D., of Cartagena, Colombia, South America, "Variety of Forms of Tuberculosis in the Mountains and the Valleys of Colombia."

Louis W. Shrading, M. D., delegate from Tennessee, "Why Not Educate Against Tuberculosis?"

Light and Electricity in Treatment.

J. W. Kime, M. D., of Des Moines, Iowa, "The Rôle of Light in the Treatment of Tuberculosis," by title in the absence of the author.

Dr. J. Mount Bleyer, M. D., of New York, "Light in the Treatment of Tuberculosis."

Dr. H. L. Mason, E. E., of New York, "The Actinic Ray in the Nature of Tuberculosis."

Which papers were illustrated by instruments.

Surgical Treatment of Tuberculosis.

Dr. Augustus C. Bernays, M. D., of St. Louis, not being present, his paper was read by title, "The Results of Treatment of Tuberculosis by Surgical Extirpation."

Dr. M. M. Johnson, of Hartford, Conn., then read his paper on "The Surgical Treatment of Tuberculosis."

Dr. J. B. Sacasa, of Nicaragua, "A Contribution to the Surgical Treatment of Tubercular Peritonitis." The paper was read by title at author's request.

The Etiology of Tuberculosis.

The order of the Etiology of Tuberculosis was then taken up and the following papers read:

By Dr. U. O. B. Wingate, of Milwaukee, Secretary State Board of Health, "Etiological Factors of Tuberculosis, other than Bacillus Tuberculosis."

By Hubbard W. Mitchell, M. D., ex-President Medico-Legal Society, "The Bacillus of Tuberculosis."

By T. D. Crothers, M. D., of Hartford, "Tuberculosis Due to Toxæmic States."

By Edwin F. Bowers, M. D., of New York, "Bioplasm in Tuberculosis."

Paper by Dr. Nils R. Finsen, of Copenhagen, Denmark, "Phototherapy of Lupus Vulgaris," was read, in the absence of the author, by Dr. E. T. Bowers, of New York.

Paper by Dr. W. J. Stapleton, of Detroit, Mich., was read by title, "Symptoms of Tuberculosis."

By Dr. Albert Strauss, of San Francisco, Cal., was read by title, "The Heart in Pulmonary Tuberculosis."

By Prof. W. A. Hackett, M. D., of Detroit, Mich., was read by title, "Lupus—A Tubercular Affection of the Skin."

By Dr. Edwin Leonard, Jr., M. D., "The Basophilic Leucocyte vs. the Tubercular Bacilli," was read by the author.

Paper by Col. E. Chancellor, M. D., of St. Louis, Mo., "The Significance of Certain Physical Signs in Incipient Phytamosis—Their Diagnostic Value," was read by title at author's request.

However, one crank, a notorious anti-vaccinist, who attributes

consumption to vaccination, did appear. And, in virtue of his membership of the Medico-Legal Society, he was permitted to read his tirade. And then, figuratively speaking, he was kicked out. By vote of the congress both his name and the title of his paper were excluded from the record. The aspersion of the "Boston Medical and Surgical" appears to have been based upon this incident.

TUBERCULOSIS A BAR TO IMMIGRATION.

On the strength of a declaration by the surgeon-general of the Marine-Hospital service that pulmonary tuberculosis is a dangerous contagious disease, the superintendent of immigration has issued an order that in future immigrants with tuberculosis of the lungs must be debarred from all ports of the United States, regardless of boards of special inquiry, which heretofore have used their discretion in the matter. Formerly the board of special inquiry at this port, after receiving the report on a case of tuberculosis from the chief of the medical division of the immigration service at New York, could exercise discretion as to the admission of the person, and there have been instances in which a child ill of the disease has been permitted to land with its parents; but henceforth no one with consumption will be knowingly admitted to the country. The inspection of tuberculous immigrants is not likely to be so thorough as to cull out all infected arrivals, and the most that can be expected from it is the exclusion of advanced cases, where the physical and rational signs are sufficiently obvious. For it is hardly to be supposed that tuberculin tests will be made, and without this it would not be possible to exclude all cases. The order appears to be justifiable under existing laws for the prohibition of persons likely to become a public charge, but it is reasonable to believe that there may be many exceptions to this condition by consumptives, well able to take care of themselves, in search of congenial climate, with the hope of regaining health. Evidently, therefore, there is room for the exercise of considerable discretion in the premises, without risk to the country. And it should be exercised. The rule will apply also to alien passengers in the first and second cabins as well as to those in the steerage.

TO LIVE IN TENTS.

The increasing number of visitors passing through the corridors of the capitol every day (Denver "News") is regarded as evidence of the presence of many strangers in Denver. The city is

now filling up with summer tourists, and travel from the East is increasing. The summer exodus from Denver will also begin shortly, but it will not compare in volume with the accessions.

On a ranch near Bennett, twenty-five miles east of Denver, a novel summer camp has been established for the cure of consumptives. Patients are to live in tents and spend almost the entire time in the open air. The altitude of 5,000 feet, the freedom from moisture and the advantages of pine-laden breezes from the divide, are pointed out as strong arguments for the new resting place. As the cost of living under such circumstances is much less than ordinary, the physicians in charge of the movement are expecting prompt recognition by people of the East who are sending their friends to the mountains.

IS IT POSSIBLE BY PROPER DIETETICS AND HYGIENE TO EXTERMINATE TUBERCULOSIS?

J. E. Kinney ("Medical Record") believes that this can be gradually accomplished, though there are two obstacles which are almost insurmountable. The first is the fact that as a rule people are not ready, while having a fair degree of health, to make effort to preserve it. Those who have not suffered are not willing to be taught, and so will not readily co-operate in regulating the conditions which have to do with their own health, or the health of their children, until they become ill. Secondly, the poverty of many in small communities, and of the masses in the large cities, does not permit of such food and shelter, air and exercise as are required to produce healthful physical conditions. But each one must answer the question for himself, and as he thinks so will he work, and as he works so will the cause be hastened or retarded, for according to our present knowledge it depends not on any climate and its influence, nor on any community and its sanitation, nor on any one person and his work, but on the united efforts of all in every community.

"PUBLIC HOUSEKEEPING."

Mrs. Potter Palmer, of Chicago, recently suggested (Minneapolis "Press") the fitness of women to enforce the cleansing of the city by a daily inspection, on the ground that such work was simply "public housekeeping." The good housewife makes a daily round of her premises and sees to it that every speck of dust or dirt is eliminated. So if women were given the inspection of the streets and authority to enforce the ordinances, they would be pretty sure to keep them clean.

In Philadelphia a Miss Imogen Pierce has established a Sanitary League, with offices in a prominent building, and proposes a crusade for cleaning the streets, which is enthusiastically seconded by the members of the club which she has organized. The club has been concentrating its efforts upon plans for some time. In speaking of them, Miss Pierce says: "The household custom of a daily morning round is to be the rule. Alleys, courts and side streets will receive as much attention as the more important thoroughfares, and there is already a manifest rivalry as to whose precinct shall be the cleanest."

It is to be hoped that many other women will follow this example and, moreover, that the sanitary authorities of American cities, generally, may speedily recognize the superior fitness of women for the maintenance of cleanliness and appoint them to the service.

QUARANTINE AND LIFE INSURANCE.

A recent newspaper statement (N. Y. "Medical Journal") was to the effect that in a city in the northern part of the State of New York a woman, having been compulsorily secluded for about six weeks on account of small-pox, notified the board of health that her policy of life insurance was likely to lapse, inasmuch as her detention was preventing her from getting the money necessary for the payment of a premium, and that the board paid the premium, holding that if the policy lapsed and the woman died, there would be a case against the city. We believe the feeling was well founded, and we hope the board's act will serve as a precedent.

SPECIAL INSURANCE FOR TOTAL ABSTAINERS.

In answer to a numerously signed petition, the Equitable Life Insurance Society of this city has agreed to put in a special class any successful applicant for insurance who declares that he has been a total abstainer from the use as a beverage of alcoholic liquors, including wine, beer and fermented cider, and as a condition of membership in this class agrees to remain a total abstainer as long as his policy is in force. Any surplus apportioned to the policy will be based on the experience of the society on policies belonging to the total-abstinence class. It is believed by the petitioners that the number of the total-abstinence class will receive the benefit of largely increased dividends. A number of British life insurance companies have for many years segregated their total-abstinence policy holders.

CREMATION INCREASING.—According to statements made at a recent meeting of the Cremation Society, Sir Henry Thompson presiding, there would appear to be a steady and marked advance in this method of disposal of the dead. From the following figures the progress made at Woking alone may be seen: 1885, 3 cremations; 1886, 10; 1887, 13; 1888, 28; 1889, 46; 1890, 54; 1891, 99; 1892, 104; 1893, 101; 1894, 125; 1895, 150; 1896, 137; 1897, 173; 1898, 240. The cost still remains prohibitive, being, it is believed, from $50 to $75 at Woking. A number of towns are applying for power to erect crematoria, and the movement seems well under way.—"Medical Magazine."

THE PHYSICIAN AS A PIONEER IN CIVILIZATION.

In a well conceived editorial article entitled "The Medical Factor in Imperial Expansion," the "Lancet" for May 27th sets forth impressively the importance of the part played by two medical missionaries, Dr. David Livingstone and Dr. Stewart, in extending civilization in Africa by the power, not alone of religion, but also of "nature study in its medical department." There can be no doubt of the truth of the "Lancet's" view that religion and medicine are powerful allies in reclaiming savage races, and it would not be strange if American counterparts of Livingstone and Stewart were soon to find themselves in the Philippine Islands.—New York "Medical Journal."

THE DANGER OF FLANNELETTE.

The "Lancet" for March 30th comments editorially upon the danger of flannelette as a material for clothing, in consequence of its extreme inflammability. It is said to ignite "with the most dangerous ease, burning with a hot, bluish flame not unlike the flame of burning alcohol, and once alight it is wellnigh impossible to extinguish it." The burning to death of a child, six years of age, from the ignition of its flannelette night dress, in spite of the efforts of the mother to extinguish the flames, forms the text for this comment. The "Lancet" has tested the material again and again, and finds that "it takes fire instantly . . . a hot blue flame shooting along the surface and increasing most rapidly in size and in intensity." The dangers of celluloid for articles of attire have been frequently pointed out, but it would seem to us that if the "Lancet's" findings are substantiated, flannelette, owing to its much more frequent use and the larger masses employed, in some instances enveloping nearly the whole body, is likely to prove a far more generally dangerous article of wear.—"New York Medical Journal."

MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

NEW YORK.—The Bulletin of the State Department of Health for April reports: Population, 7,268,000: Total deaths, 11,035; death rate, 18.4; deaths under five years, 2,892; percentage of deaths under five years to total deaths, 26.2; from zymotic diseases, per 1,000 from all causes, 107; from cerebro-spinal meningitis, 59; typhoid fever, 120; malarial diseases, 16; small-pox, 42; scarlet fever, 219; measles, 109; erysipelas, 62; whooping cough, 78; croup and diphtheria, 273; diarrhœal diseases, 200; acute lung diseases, 1,899; consumption, 1,296; puerperal diseases, 101; diseases of the digestive system (not diarrhœal), 613; urinary system, 867; circulatory system, 1,058; nervous system, 1,268; cancer, 423; accidents and violence, 447; old age, 481; unclassified, 1,404.

City of New York, 3,536,517: Total deaths, 5,929; death rate, 20.4; deaths under five years, 1,892; from cerebro-spinal meningitis, 28; typhoid fever, 48; malarial diseases, 9; small-pox, 40; scarlet fever, 185; measles, 32; erysipelas, 33; whooping cough, 36; croup and diphtheria, 211; diarrhœal diseases, 155; acute lung diseases, 1,127; consumption, 761; cancer, 205.

Borough of Manhattan, 1,873,562: Total deaths, 3,316; death rate, 21.5; deaths under five years, 1,123; from cerebro-spinal meningitis, 22; typhoid fever, 19; malarial diseases, 4; small-pox, 1; scarlet fever, 99; measles, 8; erysipelas, 19; whooping cough, 12; croup and diphtheria, 125; diarrhœal diseases, 110; acute lung diseases, 613; consumption, 387; cancer, 114.

Borough of the Bronx, 22,124: Total deaths, 394; death rate, 22.0; deaths under five years, 127; from cerebro-spinal meningitis, 1; typhoid fever, 3; malarial diseases, 1; small-pox, 37; scarlet fever, 7; measles, 2; erysipelas, 1; whooping cough, 1; croup and diphtheria, 12; diarrhœal diseases, 6; acute lung diseases, 63; consumption, 89; cancer, 10.

Borough of Brooklyn, 1,209,064: Total deaths, 1,907; death rate, 19.0; deaths under five years, 583; from cerebro-spinal meningitis, 5; typhoid fever, 21; malarial diseases, 3; small-pox, 2; scarlet fever, 77; measles, 16; erysipelas, 12; whooping cough, 13; croup and diphtheria, 69; diarrhœal diseases, 38; acute lung diseases, 351; consumption, 245; cancer, 73.

Borough of Queens, 162,834: Total deaths, 207; death rate, 15.5; deaths under five years, 57; from typhoid fever, 4; malarial diseases, 1; scarlet fever, 2; croup and diphtheria, 4; diarrhœal diseases, 1; acute lung diseases, 50; consumption, 28; cancer, 8.

Borough of Richmond, 68,933: Total deaths, 105; death rate, 18.5; deaths under five years, 22; from typhoid fever, 1; measles, 6; erysipelas, 1; croup and diphtheria, 1; acute lung diseases, 20; consumption, 14.

Dr. Theodore C. Walser, the whilom deputy health officer of the port, has been appointed by Commissioner John B. Sexton, of the Health Department, to the position of Assistant Sanitary Superintendent, for the Borough of Richmond, to fill the vacancy created by the recent death of Assistant Sanitary Superintendent, John L. Feeny, M. D. His appointment is notably creditable to the Department of Health, being wholly dependent upon the recognized superior fitness of Dr. Walser for the position, and for the best interest of the borough.

The State Department of Health has instituted measures for the co-operation of all health officers for accumulating information as to the number of the population of the State having pulmonary tuberculosis. The purpose is to obtain, with such accuracy as it is possible to do, a record of the number of persons in each municipality who at this time are subjects of this disease; to learn the locality of the disease, its distribution and surroundings. This accumulation of data will be fundamental to more exact plans for its control; it will likewise be of great value in the discussion of the question of State care of consumption and also in determining the death rate from this cause. It is desired that a more general report in the nature of a census of the existing cases of consumption be made, not only from towns and villages, but from every local municipality. If this is carefully made it will furnish material for the more direct control of this disease as well as information as to its distribution and surrounding conditions.

Albany, 94,151: Total deaths, 156; death rate, 20.1; deaths under five years, 28; from typhoid fever, 1; scarlet fever, 1; measles, 2; croup and diphtheria, 4; acute lung diseases, 20; consumption, 22; cancer, 4.

Syracuse, 108,374: Total deaths, 143; death rate, 16.0; deaths under five years, 30; from cerebro-spinal meningitis, 1; typhoid fever, 1; whooping cough, 2; croup and diphtheria, 2; acute lung diseases, 20; consumption, 25; cancer, 6.

Buffalo, 352,387: Total deaths, 451; death rate, 15.5; deaths under five years, 132; from cerebro-spinal meningitis, 5; typhoid fever, 5; malarial diseases, 1; scarlet fever, 3; erysipelas, 3; whooping cough, 12; croup and diphtheria, 9; diarrhœal diseases, 15; acute lung diseases, 74; consumption, 36; cancer, 28.

Rochester, 162,608: Total deaths, 220; death rate, 16.5; deaths under five years, 31; from scarlet fever, 1; measles, 2; erysipelas, 2; whooping cough, 2; croup and diphtheria, 2; diarrhœal diseases, 2; acute lung diseases, 21; consumption, 23; cancer, 16.

CALIFORNIA.—Los Angeles, 102,479: Report for May: Total deaths, 148; death rate, 16.9; deaths under five years, 21; from cerebro-spinal meningitis, 2; typhoid fever, 3; croup and diphtheria, 2; acute lung diseases, 9; consumption, 27; cancer, 3.

At a recent meeting of the new State Board of Health, Dr. R. W. Hill, of Los Angeles, was elected president and Dr. W. P. Matthews, of Sacramento, was elected secretary. A committee was appointed to interview the Superintendent of the State Hospital for the Deaf, Dumb and Blind, at Berkeley, and ascertain the number of cases of small-pox in that institution; also to learn why he has neglected to notify the board of the prevalence of the disease, it being claimed that sixty-five of the inmates are afflicted.

The matter of river pollution was discussed, but nothing definite was agreed upon. The subject of vaccination also came up, and Secretary Matthews was instructed to issue a circular of suggestion on the best methods to be pursued and the best virus to be obtained.

The board expressed its approval of the work already done in cleaning up Chinatown in San Francisco, and decided to continue the work.

COLORADO.—Denver, 136,000: Report for April: Total deaths, 216; death rate, 15.8; deaths under five years, 39; from typhoid fever, 2; scarlet fever, 11; erysipelas, 2; croup and diphtheria, 9; acute lung diseases, 35; consumption, 43; cancer, 6.

CONNECTICUT.—The State Board of Health Bulletin reports for April: Total deaths, in 168 towns and villages, 1,253; death rate, 16.9 for the large towns; small towns, 15.5; for the State, 16.5; deaths under five years, 300; from cerebro-spinal meningitis, 6; typhoid fever, 57; malarial fever, 4; scarlet fever, 5; measles, 11; influenza, 71; croup and diphtheria, 25; erysipelas, 7; whooping cough, 5; diarrhœal diseases, 11; acute lung diseases, 200; consumption, 141.

Hartford, Conn., June 3.—In the State Senate this afternoon it was voted not to attempt the establishment of a State pulmonary disease hospital this session, but to appropriate $25,000 to try the experiment in connection with the Hartford Hospital.

DISTRICT OF COLUMBIA, 278,718. The Health Officer reports for four weeks ending May 25, 1901: Total deaths, 384; death rate, 17.9; deaths under five years, 86; from typhoid fever, 4; malarial diseases, 3; whooping cough, 5; croup and diphtheria, 6; acute lung diseases, 35; consumption, 78; cancer, 15.

ILLINOIS.—Chicago, 1,758,025. Report for April: Total deaths, 2,116; death rate, 13.88; deaths under five years, 589; from cerebro-spinal meningitis, 2; typhoid fever, 20; small-pox, 1; scarlet fever, 18; measles, 13; whooping cough, 24; croup and diphtheria, 37; diarrhœal diseases, 8; acute lung diseases, 436; consumption, 320; cancer, 96.

The State Board of Health met in Chicago, June 3, and decided to issue in book form the whole story of its long fight, with the aid of experts, to prove that the Chicago drainage channel has not polluted the waters of the Illinois River. This test is considered to have been the most exhaustive one of the kind ever made, and requests for the story of the methods employed have come from scientific societies in every part of the world. The chemical examinations of water taken at various points on the river by the State Board cover the last two years, and furnish the most conclusive testimony in favor of the contention of Illinois that there has been no pollution. The failure of the attempt of St. Louis to take advantage of the recent order of the War Department concerning the reduction of the canal flow is generally regarded as showing that the claim of water pollution, upon which the injunction suit in the Supreme Court is based, has fallen to the ground.

INDIANA.—Reports to the State Board of Health show 2,556 deaths in May, a rate of 11.9. For the preceding month 2,839 deaths were reported, a rate of 13.7. For May, 1900, 2,556 deaths were reported, a rate of 11.4.

By important ages there were: Deaths under one year, 347; one to five inclusive, 151; sixty-five years and over, 640. From important causes: Pulmonary tuberculosis, 354; other forms of tuberculosis, 48; typhoid fever, 33; diphtheria, 21; scarlet fever, 7; measles, 35; whooping cough, 15; pneumonia, 250; diarrhœal diseases under five, 13; cerebro-spinal meningitis, 27; influenza, 40; puerperal fever, 17; cancer, 76; violence, 136.

All cities representing a population of 847,302 reported 1,028 deaths, a rate of 14.3. The country, representing a population of 1,669,160, reported 1,528 deaths, a rate of 10.8. The consumption rate in the cities was 186.6 per 100,000, and in the country 155.5.

Typhoid fever had a rate of 16.7 per 100,000 in cities, and 14.8 in the country; influenza, cities 17, country 23; puerperal fever, cities 4.1, country 9.8; cancer, cities 35, country 41; pneumonia, cities 116, country 134.

Special morbidity reports show a decrease in sickness of about 10 per cent. as compared with the preceding month, and the mortality reports sustain the conclusion. The decrease appeared in pneumonia, typhoid fever, scarlet fever, measles, croup, cerebro-spinal meningitis, influenza, whooping cough and puerperal fever. Diphtheria increased slightly, also diarrhœal diseases.

Small-pox appeared in 19 counties, at 60 different points. The number of cases was 230, with 3 deaths.

IOWA.—Infectious diseases reported as having occurred during the month of April: *Diphtheria,* in 19 localities; *measles,* in 9; *scarlet fever,* 39; *small-pox,* 79; *typhoid fever,* 2.

Davenport, 40,000. Report for the year ending February 28, 1901: Total deaths, 478; death rate, 11.80; deaths under five years, 95; from typhoid fever, 15; scarlet fever, 1; croup and diphtheria, 3; acute lung diseases, 55; consumption, 45; cancer, 35. For the month of April: Total deaths, 54; death rate, 18.83; deaths under five years, 12; from typhoid fever, 1; diphtheria, 1; acute lung diseases, 5; consumption, 6; cancer, 2.

KANSAS.—The Secretary of the State Board of Health reports *small-pox* during the month of May in 50 localities, with an aggregate of 741 cases, with 4 deaths.

KENTUCKY.—The State Board of Health has issued the following rules and regulations for the prevention of small-pox:

7. All persons unprotected against small-pox by a former attack of the disease, or by recent successful vaccination, known to have been exposed to a person suffering from small-pox in the eruptive stage of the disease, shall be quarantined for 17 days from the time of exposure, and be vaccinated.

8. Quarantine of small-pox patients shall be maintained until they have completely desquamated or scaled off, as certified by a reputable physician, and until the house and its contents have been properly disinfected under the supervision of the Board of Health. Persons in the house with the patient who are not protected against small-pox by a recent successful vaccination, or a former attack of the disease, shall be quarantined for 17 days from the time disinfection of the house is completed.

9. Persons who have recently recovered from small-pox, or suspected small-pox, the nature of their malady not having been known or recognized at the time of their illness, shall be returned to their homes until their dwellings and contents, including the clothing of all the inmates, are properly disinfected under the supervision of the Board of Health.

10. No child in a community in which small-pox actually exists shall attend any public, parochial or private school without presenting satisfactory evidence of having been successfully vaccinated.

LOUISIANA.—New Orleans, 300,000—90,000 colored. Report for April: Total deaths, 509—185 colored; death rates, white, 18.5; colored, 24.6; total, 20.36; deaths under five years, 112—44 colored; from typhoid fever, 6; malarial diseases, 7; small-pox, 5; scarlet fever, 4; erysipelas, 1; whooping cough, 2; acute lung diseases, 57; consumption, 62; cancer, 11.

MAINE.—The Secretary of the State Board of Health has addressed, June 3, a circular letter to the local boards of health throughout the State, urging special attention to the extensive prevalence of small-pox and needful measures for its exclusion. There is danger of the importation of the disease by the way of the Canadian Pacific Railway, and at Berlin, N. H., on the Grand Trunk, there are 33 cases according to recent report from the State Board of Health of New Hampshire. In many other States, as well as in the Canadian provinces, small-pox is unusually prevalent. There is therefore urgent need that each local board of health be fully organized and ready to act instantly if a known or suspected case of small-pox or exposure to small-pox occur in its town.

MARYLAND.—Baltimore, 541,000. Report for April: Total deaths, 784; death rate, 17.4; deaths under five years, 221; from typhoid fever, 7; whooping cough, 2; croup and diphtheria, 11; acute lung diseases, 122; consumption, 100; cancer, 33.

In his annual report for 1900, Health Commissioner Bosley urges that the most important question for the people of Baltimore to consider at present is the establishment of a general sewerage system. The report dwells upon the present condition of the city and the ever-present menace to health existing in the harbor.

Dr. Bosley also urges the necessity for an infectious disease hospital, recommends the removal of all cow stables from within the

city limits, calls attention to the importance of sanitary paving of alleys and devotes a page to the condition of the public school buildings.

The death rate for the year was 19.77 a thousand, compared with 18.76 a thousand for the year 1899. The white death rate was 17.48 and the colored 33.42. Of the deaths, 1,303 were caused by pneumonia, 1,056 by consumption, 660 by heart troubles, 618 by Bright's disease, 222 by diphtheria and 189 by typhoid fever.

MASSACHUSETTS.—Boston, 560,892. The Health Department has adopted the international system of classification for causes of death. Report for March: Total deaths, 1,026; death rate, 21.95; deaths under five years, 270; from cerebro-spinal meningitis, 3; typhoid fever, 3; scarlet fever, 25; measles, 7; erysipelas, 9; whooping cough, 4; croup and diphtheria, 47; acute lung diseases, 185; consumption, 128; cancer, 45.

MICHIGAN.—The Secretary of the State Board of Health reports for the month of May, 1901, compared with the preceding month, whooping cough, dysentery and diphtheria were more prevalent; and influenza, pneumonia, erysipelas and typhoid fever less prevalent. Compared with the average for May in the ten years, 1891-1900, scarlet fever, small-pox and typhoid fever were more than usually prevalent; and consumption, remittent fever, inflammation of bowels, measles and cerebro-spinal meningitis were less than usually prevalent.

Of the most dangerous communicable diseases, *cerebro-spinal meningitis* was reported present at 10 places; *whooping cough* at 35 places; *diphtheria* at 61 places; *typhoid fever* at 70 places; *measles* at 76 places; *small-pox* at 153 places; *scarlet fever* at 157 places; and *consumption* at 231 places. *Cerebro-spinal meningitis* reported at 1 place less; *whooping cough* at 10 places more; *diphtheria* at 6 places more; *typhoid fever* at 1 place more; *measles* at 14 places more; *small-pox* at 14 places more; *scarlet fever* at 4 places more, and *consumption* at 22 places more than in the preceding month.

Small-pox, June 12: Since the first of January, outbreaks of small-pox in 199 localities in Michigan have been caused to cease; and in 132, or 66 per cent. of those outbreaks, *the disease was restricted to the one household where the first case occurred.* Notwithstanding this splendid record of effective work by the health services, State and local, the disease continued to spread, because in the other outbreaks where the disease was not restricted to the

first household, it was first called "Cuban Itch," "Cedar Itch," chicken-pox, or acne, and not reported to the health officer so that restrictive measures could be taken. Because of such lack of proper reports, small-pox continued to spread. It is now present in 75 places in Michigan, 5 places more than in the preceding week.

The number of deaths reported to the Secretary of State for the month of May was 2,785. This number corresponds to a death rate of 13.7. There were 214 less deaths than in the preceding month, and 19 less than in the corresponding month of the year 1900. No report was received from the city of Sault Ste. Marie, being the first time that a city registration service has failed to make report since the establishment of registration.

There were 326 deaths of infants under one year of age, 162 deaths of children aged one to four years inclusive, and 829 deaths of persons aged 65 years and over. Important causes of death were as follows: Pulmonary tuberculosis, 199; other forms of tuberculosis, 35; typhoid fever, 29; diphtheria and croup, 42; scarlet fever, 29; measles, 6; whooping cough, 15; small-pox, 2; pneumonia, 245; influenza, 79; cancer, 138; accidents and violence, 160.

MINNESOTA.—Minneapolis, 240,000. Report for April: Total deaths, 204; death rate, 8.5; deaths under five years, 44; from typhoid fever, 25; measles, 1; scarlet fever, 1; erysipelas, 1; croup and diphtheria, 11; acute lung diseases, 30; consumption, 21; cancer, 12.

St. Paul, 165,000. Report for April: Total deaths, 114; death rate, 8.28; deaths under five years, 35; from scarlet fever, 5; diphtheria, 2; acute lung diseases, 22; consumption, 7; cancer, 3.

Winona, 20,000. Report for the year ending March 31, 1901: Total deaths, 256; death rate, 12.8; deaths under five years, 87; from typhoid fever, 5; scarlet fever, 5; diphtheria, 10; small-pox was very prevalent for about four months, to the number of 1,751 cases, with no deaths reported.

MISSOURI.—St. Louis, 575,200. Report for the year 1900: Total deaths, 9,847; death rate, 17.11; deaths under five years, 2,648; from cerebro-spinal meningitis, 18; typhoid fever, 168; malarial fevers, 112; small-pox, 3; scarlet fever, 57; measles, 45; erysipelas, 38; whooping cough, 15; croup and diphtheria, 409; diarrhœal diseases, 469; acute lung diseases, 1,351; consumption, 1,006; cancer, 345.

For the month of April, 1901: Total deaths, 883; death rate, 18.42; deaths under five years, 177; from cerebro-spinal menin-

gitis, 1; typhoid fever, 4; malarial diseases, 7; small-pox, 1; scarlet fever, 4; measles, 4; erysipelas, 5; whooping cough, 7; croup and diphtheria, 25; diarrhœal diseases, 10; acute lung diseases, 156; consumption, 95; cancer, 29.

NEW JERSEY.—Newark, 250,000. Report for four weeks ending May 25, 1901: Total deaths, 357; death rate, 18.58; deaths under five years, 93; from typhoid fever, 5; small-pox, 2; scarlet fever, 1; measles, 2; croup and diphtheria, 7; acute lung diseases, 64; consumption, 45; cancer, 7.

Hudson County (Jersey City and vicinity), 386,048. Report for April: Total deaths, 570; death rate, 17.7; deaths under five years, 191; from typhoid fever, 4; small-pox, 3; scarlet fever, 6; croup and diphtheria, 13; acute lung diseases, 90; consumption, 75.

Paterson, 105,961. Report for April: Total deaths, 140; death rate, 15.7; deaths under five years, 39; from scarlet fever, 1; croup and diphtheria, 7; diarrhœal diseases, 3; acute lung diseases, 29; consumption, 13; cancer, 9.

Paterson has appropriated $2,500 and has appointed a committee to investigate its own needs in regard to relieving the Passaic River of sewage pollution. The Newark Board of Trade committee on pollution hopes to raise some money for a similar purpose, and Passaic City has directed its engineers to perfect its sewerage plans for future consideration. The city authorities of all the cities have been requested to furnish carefully prepared estimates of their sewage discharge, and it is hoped the necessary measurements will be obtained by the Newark Board of Works. With the work of the State Sewerage Commission, it is hoped to have the whole problem ready for the consideration of expert engineers, who are to be employed by the State Commission, and obtain a report before next winter, so that legislation may be secured without further difficulty. The prospects now seem better than heretofore for united action, without which nothing can be accomplished.

NORTH CAROLINA.—The State Board of Health Bulletin reports for April: Total deaths in 24 towns, with an aggregate population of 124,961, of which 47,367 are colored, 164—87 colored; death rates, white, 11.9; colored, 22.0; total, 14.2; deaths under five years, 45; from malarial fever, 2; whooping cough, 1; measles, 1; pneumonia, 22; consumption, 24; brain diseases, 12; heart dis-

ease, 2; neurotic diseases, 3; diarrhœal diseases, 11; accident and violence, 6; all other causes, 70.

OHIO.—Cleveland, 395,000. Report for April: Total deaths, 493; death rate, 15.45; deaths under five years, 174; from typhoid fever, 14; small-pox, 6; scarlet fever, 3; croup and diphtheria, 7; acute lung diseases, 72; consumption, 8; tuberculosis, 33; cancer, 10.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for four weeks ending May 25, 1901: Total deaths, 1,436; deaths under five years, 507; from cerebro-spinal meningitis, 4; typhoid fever, 41; small-pox, 2; scarlet fever, 26; measles, 7; erysipelas, 3; whooping cough, 29; croup and diphtheria, 48; acute lung diseases, 269; consumption, 258; cancer, 59.

Pittsburgh, 332,000. Report for four weeks ending May 25, 1901: Total deaths, 516; death rate, 20.3; deaths under five years, 186; from typhoid fever, 40; scarlet fever, 5; measles, 5; croup and diphtheria, 5; acute lung diseases, 83; whooping cough, 22; consumption, 32; cancer, 10.

June 9: Typhoid fever keeps its hold west of the Schuylkill River. Up to noon yesterday the week's record showed 120 new cases, of which 36 are in the Twenty-fourth, Twenty-seventh, Thirty-fourth and Fortieth wards. The lower section of the city, included in the First, Twenty-sixth, Thirty-sixth and Thirty-ninth wards, is also afflicted to a greater extent than last week, 30 cases being reported within their bounds.

Of scarlet fever there were 77 new cases and of diphtheria 63. The latter disease is almost widespread on the west side, 19 of the cases being from the four wards there. The steady decrease in the number of deaths since the beginning of the year is broken. For the week there were 410 deaths, an increase of 1 compared with the corresponding period of last year.

TEXAS.—Before the New York party which has recently been touring Texas left the State, Dr. George A. Soper submitted to an interview concerning his observations in matters pertaining to sanitation and health in Texas. Dr. Soper is a sanitary engineer, and on the recent tour he was chairman of the committee appointed to report on the climate and health of the State. He is not unknown to the people of Texas, for in last September he came to Galveston at the request of the Chamber of Commerce of the State of New York, the Merchants' Association of the City of

New York and the Galveston Central Relief Committee, and had charge, under the auspices of the Central Relief Committee, of the work of sanitation, or rather of again putting the city in a sanitary condition. His work at that time was recognized as of the highest value and is appreciated by the people of that city and others who witnessed it. Dr. Soper will make an exhaustive report of his observations upon his return to New York, and the present interview covers but in a general way only some of the points which will be discussed in his report.

In response to the request of "The News" special correspondent, Dr. Soper said, in part:

"There are a dozen towns in Texas of 6,000 to 12,000 inhabitants which have no sewerage system, and a half dozen towns of 3,000 inhabitants, each of which has neither waterworks nor sewerage systems. Is there not here an opening for capital? There are many water and sewerage companies in Texas, and it is said upon good authority that a franchise for water and sewerage works in the towns referred to can be obtained by residents of Texas or outsiders on satisfactory terms. As a good Texan, desirous of seeing the interests of the State of my sympathies promoted, I take the liberty of discovering to the capitalists of New York and other places this promising field for investment.

"The second commandment in the gospel of health is to destroy all material which is infectious or liable to communicate disease. This is rarely done in Texas or elsewhere in a manner which satisfies the requirements of sanitary specialists. Sewage carried from a thickly populated city is frequently emptied into rivers or creeks without regard to its ultimate disposition. Water supplies are commonly taken from brooks, creeks or rivers, many of which are polluted by the sewage and other offscourings of communities near by. It is feasible to dispose of the sewage so that it shall not be offensive or dangerous. It is possible to perfect water supplies however contaminated or dangerous to health. Sanitary engineers have worked upon these two problems for many years, and by the aid of scientists have perfected systems which can be applied upon a scale which ranges from the requirements of the smallest house or town to the demands of the largest cities. Garbage and excrement destructors have been made and operated satisfactorily. In the design and construction of sanitary works of any magnitude a conservative view should be taken of the claims advanced by promoters and others whose interest in the matter depends upon the commercial introduction, sale or disposal of patent rights, devices or other marketable properties.

"In the sanitary improvement of cities it is usual to consider as the first requirement a general water supply; second, a sewerage system, and, third, pavement. In planning such works, regard should be had not only for the present, but for the future of the town; and, if the appropriation be limited, it is good policy to construct only the main and most important features of the works first. To many these suggestions will appear trite and superfluous, but they are founded on the experience of a great number of American cities whose unexpected growth has brought about a complicated, inadequate and expensive series of sanitary improvements. In many of the Texas towns I have visited it would be advantageous to outline, with the assistance of a competent expert, a comprehensive scheme of sanitation, the details to be taken up and perfected by one as the demands and resources of the situation permit."

VIRGINIA.—The Richmond "Leader" of recent date reports the action of the Finance Committee of the Council in shelving the ordinance to provide for the establishment of a department and inspector of milk, fruit, meat, etc. The ordinance had received the hearty approval of the Board of Health and the Committee on Health, and was approved by the physicians of the city as justifying so modest an expenditure as this ordinance called for—some $1,500 a year—in order to establish a safeguard to the health of the city. The need of just such inspection is urged during the summer season, when, it is said, much fruit of a damaged character is put on the Richmond market after being refused by Baltimore, Norfolk or Washington. The need of the inspection of milk is urged also with a view to decreasing the percentage of typhoid cases by prohibiting the sale of milk by parties whose plant or stock are not in good sanitary or healthy condition. The doctors are very urgent in this matter. They say Richmond is unprotected at this time and that its general health is at the mercy of unprincipled venders of unsound fruit or meat, or of impure milk.

WASHINGTON.—Seattle, 90,000. Report for April: Total deaths, 77; death rate, 10.26; deaths under five years, 12; from typhoid fever, 2; scarlet fever, 2; acute lung diseases, 17; consumption, 6; cancer, 2.

WISCONSIN.—Milwaukee, 295,000. Report for April: Total deaths, 323; death rate, 13.3; deaths under five years, 100; from typhoid fever, 5; scarlet fever, 1; diphtheria, 9; acute lung diseases, 42; consumption, 34; cancer, 14.

State Board of Health Report for the biennial period ending September 30, 1900.—A pamphlet of nearly 300 pages, exhibiting praiseworthy attention to sanitary requirements by the board and much work by the secretary; but, in manifest default of needful legislative measures and pecuniary support, little evidence of progress in the prevention of disease. Of contagious diseases:

Small-pox.—Year ending September 30, 1899: 63 cases, with 9 deaths; year ending September 30, 1900, 446 cases, with 15 deaths.

"In the absence of any law to require vaccination in the State, we must expect more or less small-pox to prevail."

Diphtheria.—Year ending September 30, 1899, from 189 places: 2,003 cases, with 263 deaths; year ending September 30, 1900, from 185 places, 2,056 cases, with 282 deaths. Compared with previous years, "the mortality has been decidedly lower since the use of antitoxine. . . . Your secretary is of the opinion that more active measures must be taken in regard to the prevention of this disease. Our regulations certainly are not sufficient to prevent it, and, if anything, the disease is increasing. . . . Bacteriological examinations should be made of every person's throat who has in any way been exposed to diphtheria. . . . Until bacterial results can be obtained our efforts will be futile to prevent the prevalence of this disease. In order to do this work, the board should be provided with a laboratory."

Scarlet Fever.—Year ending September 30, 1899, from 141 places: 1,288 cases, with 39 deaths; year ending September 30, 1900, from 236 places: 4,497 cases, with 170 deaths.

"It is difficult to prevent the spread of this disease . . . unless medical health officers can be employed to make a house-to-house inspection at stated intervals, which should be done in all villages and cities, and especially the schools should have the benefit of a medical inspector for this purpose, as well as for other sanitary reasons."

Typhoid Fever.—Year ending September 30, 1899, from 224 places: 1,312 cases, with 120 deaths; September 30, 1900, from 233 places: 1,465 cases, with 178 deaths.

After referring to previous years: "It will be observed that this disease is being reported from more places each year. . . . The demands for the examination of drinking water are becoming greater each year. . . . Again, in order to meet the spread of this disease, your secretary most urgently calls for a laboratory."

Measles.—Year ending September 30, 1899: 5,670 cases, with 69 deaths; year ending September 30, 1900: 3,292 cases, with 45 deaths.

"Undoubtedly this only shows a proportion of the cases existing. The disease spreads most frequently among school children, and until medical inspectors can be provided for our public schools, it is a very difficult matter to control its spread."

Whooping Cough.—Year ending September 30, 1899: 3,543 cases, with 84 deaths; year ending September 30, 1900: 3,978 cases, with 90 deaths.

"This is another disease which can be met and controlled best by medical inspection of schools."

Local Boards of Health and Health Officers.

There are at present 1,305 towns, villages and cities entitled to local boards of health. For the year ending September 30, 1900, reports were received from 1,283. Of "780 health officers reporting, 468 reported *some* salary. The others reported *no salary.*" (Editor's underscore.) "In the cases where the salary is paid, in many instances the most meagre sum is given for this service."

"In the blanks issued for securing the reports of health officers, issued during the period, the question was asked of the health officer, 'whether or not a sewerage system existed in his jurisdiction.' For the year ending September 30, 1899, of the 755 places reporting, only 59 report a sewerage system; year ending September 30, 1900, of the 780 places reporting, but 63 report a sewerage system."

"A Bill to Provide for the Control of Water Supplies and Sewerage in the State of Wisconsin, and calling for an appropriation," was introduced at the last session of the Legislature, but it failed to pass.

Considering the circumstances as thus reported, it is rather a subject of wonder that contagious diseases are not even more prevalent—that they have not even reached the lawmakers, as well as their children and others, for whose sickness and death the improvident lawmakers are responsible.

Small-pox continues extensively prevalent in the United States. In some of the States, particularly in the more populous localities, where vaccination has been neglected, it is epidemic; and thus it is ever liable to become in any populous community where revaccination is neglected and where the unvaccinated reaches the proportion of ten per cent. of the population. Prompt vaccina-

tion, that is to say, within three days after exposure to infection, with fresh vaccine lymph, or that which has been well preserved, will usually prevent small-pox or, at least, greatly modify its severity in case it becomes manifest. Yet it should be borne in mind that however mild the case, or any case of varioloid, it should be isolated, for small-pox is communicable by varioloid with scarcely less certainty than by unmodified cases. Moreover, all unvaccinated persons who are known to have been exposed to infection by actual contact with, or in the vicinity of a person afflicted with small-pox, whether promptly vaccinated thereafter or not, should keep, or *be kept,* aloof from intercourse with other persons for at least twelve days—the usual period of incubation—from the time of exposure.

PORTO RICO.—San Juan: *Inspeccion Sanitaria de Garrnicion.* Official report made of the sanitary condition of the garrison of Mendoza, San Juan, etc., by Dr. Ramon Gimenez, division surgeon, January 1, 1901. Mendoza has been occupied for some years by the First Regiment of Artillery, now consisting of 230 effective men. The condition of this place is not very satisfactory, for it is old and has been undergoing very extensive changes. The sanitary condition is satisfactory, and is in charge of the regimental surgeon, a pharmacist and infirmarian. The official duties are performed with scrupulous exactness. Wells, baths, stables, etc., are in good condition. The sanitary service is under the direction of the regimental doctor, Senor Don Felix Sicardi, who is solely engaged in his official duties. He is always ready, day or night, to attend to any call that may be made on him. Every member of the regiment has been vaccinated, and revaccinated in most cases.

The infirmary is small and badly ventilated, but kept with great regularity. Mattresses are in good condition and all the coverings patients with mild diseases. The principal disease is influenza. The mortality in 1900, only 1 death from pneumonia. The food is renewed every week. When it was visited there were only three good and sufficient.

The garrison of San Juan, like that of Mendoza, has many defects of construction, but is well kept and in a healthful condition. Two patients were found in the infirmary. There was only one death among the soldiers, from acute gastro-enteritis. In February of the present year 40 cases of eruptive skin disease occurred; they were immediately sent to the sulphur springs in the neighborhood and returned in 15 days perfectly cured.

The food is regulated for each day in the week so as to give a regular change of diet. A dish called *puchero*—similar, somewhat, to hash—is composed of beef or lamb, and ham or bacon, Spanish peas and vegetables—a standing dish in Spanish countries. Monday—Puchero, with vermicelli and a variety of vegetables. Tuesday—Rice soup and puchero. Wednesday—Puchero, with vermicelli and vegetables. It will be observed that the constituents of puchero vary so that there is no surfeit of one kind of food. There are other articles that are not known here.

CUBA—Havana, 254,444. The chief sanitary officer's report for April shows a slightly larger death rate than for March, 26.64 per thousand. This is the smallest death rate for April, with the exception of 1900, that has occurred since 1889. The increase is due to deaths among children under five years of age, and caused principally by diarrhœal diseases.

The condition of the city with regard to yellow fever is most encouraging. There were but two cases and no deaths—the smallest April report of any on record. From the 8th of March to April 20th with no cases, a period of 43 days. In 1900 the longest period was from March 26th to April 1st, both inclusive, 7 days. As the population subject to yellow fever is considerably larger now than at that time, this indication is very favorable. It also indicates that the measures recently inaugurated, with regard to killing mosquitoes in and about the infected area, are having good results.

The two cases in April occurred on the 20th and the 21st, none since. The month of May begins with no yellow fever in the city; and no case of small-pox since July.

On account of the favorable sanitary condition of the city, the National authorities have deferred their quarantine from April 1st to May 15th, which is a very great benefit to commerce and travel.

The amount of sanitary work continues large. Not now doing as much cleaning of houses with our own force as formerly, having transferred about two-thirds of the force to the mosquito brigades. They are employed in cleaning out the various ditches and streams where stagnant water is found, and putting kerosene oil in all of these places. During the month about 20,000 houses have been gone over in this manner. A little oil is placed in every receptacle containing standing water and about an ounce into every closet and sink in the houses having water connections. Nearly every

house in Havana has a cess-pool and these cess-pools are ideal breeding places for mosquitoes. The oil in this way runs into the cess-pool and kills the larvæ.

Of the 953,243 population of Porto Rico, says "The World's Work," only 75,000 live in cities. On this island, but 100 miles long and 36 wide, are 40,000 district farms, and one-fifth of the island is under cultivation. The average size of a farm in Porto Rico is 45 acres, of which 12 are cultivated. Seventy-one per cent. of these Porto Rican farms are owned by whites, and the rest by negroes. Ninety-three per cent. of all the farms are cultivated by their owners, a higher rate of owner cultivation than the United States can show, where the proportion is 72 per cent. Thirty-eight per cent. of the Porto Ricans are colored. In Porto Rico 83 per cent. of the colored people are of mixed blood. The percentage of illiteracy in Porto Rico is very high—about 84. This is higher than in any other country from which statistics are obtainable, except Guatemala.

PHILIPPINE ISLANDS.—Manila and arrondissement (Filipino, 181,361; Chinese, 51,567; American and Foreign, 11,804) 244,732. Reports of vital statistics for six months, November to April: November, deaths, 976—under 5, 547; death rate, 46.84. December, deaths, 905—under 5, 259; death rate, 36.20. January, deaths, 753—under 5, 214; death rate, 30.12. February, deaths, 689—under 5, 164; death rate, 27.56. March, deaths, 885—under 5, 191; death rate, 35.40. April, deaths, 886—under 5, 208; death rate, 44.04. Of the total number of deaths for the period, 3,318 were without medical attendance.

Small-pox summed up for the year 1900: 60 cases, with 3 deaths: 54 cases Filipino, 5 American, 1 Spanish.

Bubonic Plague summed up for the year 1900: 271 cases, with 199 deaths; 186 cases Chinese, 82 Filipino, 3 American—117 of the cases occurred during the first six months of the year, the remainder in the next four months. Deaths reported from bubonic plague this year: In January, 5; February, 20; March, 51; April, 91.

A brief synopsis of plague for early diagnosis concludes with the statement that "plague in an a typical case is extremely difficult to diagnose, and in the presence of the disease any fever should be looked upon with suspicion. The certainty of other disease existing does not in any way negative plague, as it may engraft itself on any of the common diseases, as typhoid, tuberculosis, malaria,

etc. It is important to remember that the absence of bubo does not exclude plague."

Moreover, "the attention of all physicians is called to the necessity for extreme caution in the differentiation of cases of *ambulatory plague;* this type is frequently encountered, especially among the Chinese, who keep up much longer in severe illness than the other races here. Cases running their course within six hours are not uncommon, and a much less period before death may elapse after the severity of this disease is manifest; deaths even occur absolutely without antecedent symptoms, the person falling dead while at work, possibly without apparent cause, or, it may be, from a trivial injury, which, though unimportant, proves too much for a heart degenerated by the powerful toxines of plague. That these cases are true plague is borne out by the recent investigations of the Board of Health, autopsies resulting in the finding of the plague bacillus and the characteristic pathological changes."

CITY OF MEXICO, 368,777. Bulletin of mortality for February, 1901: Deaths from all causes, 1,860; from *typhus fever,* 79; grippe, 88; tuberculosis, 174; broncho-pneumonia, 72; bronchitis, 163; pneumonia, 261; diarrhœa and enteritis, 310; heart diseases, 72; cirrhosis of the liver, 59; from other causes, 1 to 25 and 33 from accidents, 527; annual death rate, 64.8.

Report for the year 1900: Deaths, 18,438—6,828 under five years of age; death rate, 49.99.

THE BRITISH MEDICAL CONGRESS OF TUBERCULOSIS FOR THE PREVENTION OF CONSUMPTION.

To be held in the Queen's Hall, London, July 22-26, 1901.

PATRON:

HIS GRACIOUS MAJESTY KING EDWARD VII.

The officers, so far as announced at the time of this writing, are: Sir William Broadbent, Professor T. Clifford Allbutt, Sir James Crichton Browne, Sir James Blyth, the Earl of Derby, and Lord Avebury. The sections are four in number: A state and municipal section, of which the president is Sir Herbert Maxwell; a medical section, president Sir R. Douglas Powell; a pathological and bacteriological section, president Professor G. Sims Woodhead; and a veterinary section, president Sir George Brown. The State and municipal section will be divided as follows: In Division

I will be considered statistical matters; in Division II, the notification of tuberculosis; in Division III, the influence of housing and aggregation (these two divisions will be taken together); in Division IV, the control of milk and meat supplies; and in Division V, the provision of sanatoria. Two distinguished foreigners are expected to take part in this section, namely, M. Henri Monod and Dr. A. J. Martin. In the medical section a discussion will be opened upon "Climatology," by Dr. C. Theodore Williams and Dr. J. Burney Yeo. On July 24th there will be a discussion upon the "Therapeutic and Diagnostic Value of Tuberculin in Human Tuberculosis," to be opened by Dr. Heron, in conjunction with the pathological section. On July 25th a discussion will be opened by Professor Allbutt upon "Sanatoria for Consumption." Demonstrations are announced upon cases of skin tuberculosis and their treatment, and of the use of Roentgen rays in diagnosis. The discussion in the pathological section will be as follows: On July 23d, "The Morphological and Physiological Variations of the Bacillus Tuberculosis and its Relations (*a*) to Other 'Acid-Fast' Bacilli, and (*b*) to the Ray Fungus and Other Streptothrices"; to be opened by Alfred Moeller, dirig. Arzt der Heilstätte Belzig, bei Berlin, and Dr. William Bullock, bacteriologist and lecturer on bacteriology and pathology to the London Hospital. On July 24th: "The Tissue Changes and Constitutional Effects Produced by the Various Constituents of Tuberculin." This will be a joint discussion in common with the medical section, to be opened by Professor Koch. On July 25th: "The Varieties of Tuberculosis (Morbid Anatomy and Histology)," to be opened by Professor Benda, Urban-Krankenhaus, Berlin; Professor Sheridan Delépine, professor of pathology, University of Aberdeen. July 26th: "Mixed Infections in Tuberculosis." Among others who are expected to take part in this section are Dr. Roux and Professor Metchnikoff, of the Pasteur Institute, Paris. In addition to the work of the sections described above, the following public addresses will be given to the whole congress: On Tuesday afternoon (23d), by Professor Koch, Berlin; on Wednesday afternoon, by Professor Brouardel, of Paris; and on Thursday afternoon, by Professor McFadyean, of the Royal Veterinary College. The official languages at the congress will be French, English and German. The honorary secretary-general is Mr. Malcolm Morris, 20 Hanover Square, London.

Dr. GEORGE BROWN, of Atlanta, Ga., has been elected by the American Congress of Tuberculosis, at its recent meeting in New York, to represent it at the London congress.

BOOK REVIEWS.

WATER AND WATER SUPPLIES.—By JOHN C. THRESH, D. S. C. (London); M. D. (Victoria); D. P. H. (Cambridge); Medical Officer of Health to the Essex County Council; Lecturer on "Public Health," King's College, London; editor of the "Journal of State Medicine"; Hon. Sec. Incorporated Society Medical Officers of Health; Fellow of the Institute of Chemistry; member of the Society of Public Analysts, etc. Second Revised Edition; 12mo., pp. 446; illustrated. Price, $2.00. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. (Printed in England).

An admirable compendium of thorough, practical knowledge with reference to the prominent necessity of *wholesome water;* what it is; how to test it; its sources; its liability to impurities and their dangers, and how to detect them; means of purification; water supplies; storage and distribution: the gist of requisite knowledge for all sanitary officers and engineers to intelligently consider the conditions and the schemes of water supplies submitted for supplying a community with water, whether that community be large or small.

MUNICIPAL SANITATION IN THE UNITED STATES.—By CHARLES V. CHAPIN, M. D., Superintendent of Health of the City of Providence, R. I. 8vo., pp. 978. Illustrated. The Providence Press, Snow & Farnham, Providence, R. I., 1901.

An elaborate compendium of sanitary methods pursued in the cities, villages, townships and counties under local control. It might go without saying that the author's viewpoint has been long noted as being among the foremost in municipalities of the United States in sanitary practice. For it was there almost a half century ago (1855) that the late Dr. E. M. Snow, one of the pioneers of practical sanitation, as the then superintendent of health of the city, began his careful registration of vital statistics and, by frequent circulars, demonstrated the relation of local conditions to the health of the people, and made them satisfied with needful procedures for its maintenance. Dr. Chapin has made excellent use of his goodly heritage. He has not only built upon it, but, as he tells us, this work is the practical outcome of a view of his own surroundings; for it was primarily to meet his own personal needs that "an investigation along several lines of public health work suggested the utility of a comprehensive study of public sanita-

tary methods" elsewhere; and this work is the result. It is not by any means an exaltation of sanitary work in Providence or any other place, but a comprehensive exhibit of all the systems and processes in actual operation throughout the country, as seen and investigated by a practical sanitarian. It begins with sanitary organization and registration of vital statistics, nuisances, plumbing and plumbing codes, water and ice, sewers, food other than dairy products, dairy products, communicable diseases, and refuse disposal are the headings of comprehensive chapters in detail that follow, replete with knowledge of practical work and, in many cases, of suggestive improvement.

FAVORITE PRESCRIPTIONS OF DISTINGUISHED PRACTITIONERS, WITH NOTES ON TREATMENT.—Edited by B. W. PALMER, A. M., M. D. Seventh Edition. 8vo., pp. 258. Price, $2.00. New York: E. B. Treat & Co.

This book is essentially a compilation—all that it pretends to be. Its popularity is attested by the exhaustion of six previous editions since 1887. "This edition (seventh) has been revised and greatly enhanced by the addition of many pages of new prescriptions of undoubted value," the whole gleaned from and credited to distinguished medical authorities and records.

PROGRESSIVE MEDICINE, Vol II., Series of 1901, well maintains the standard of practicality and interest which has marked this excellent publication from its beginning. Dr. William B. Coley describes the various operations devised for the radical cure of different kinds of hernia, and goes thoroughly into the operative treatment of gastric ulcer and intestinal perforation, in which surgery has recently made such wonderful advances. His article indeed covers the entire field of abdominal surgery. Dr. John G. Clark, in the section on gynecology, pays attention to the parasitic origin of malignant growths, the utility of spinal anæsthetization in gynecological operative procedures, and besides much other matter gives the result of his own famous and epoch-making study of the circulation of the ovary, a discovery which has cleared up many of the problems connected with evolution and menstruation. Stengel has an important chapter on the blood, in which he considers also the ductless glands, hæmorrhagic and metabolic diseases. Besides the gist of much original work of his own, he gives the results of the recent labors of others in the field. Dr. Edward Jackson concludes the volume with an able résumé of the achievements of ophthalmologists during the past year. The articles in Progressive Medi-

cine, altogether, are not mere abstracts, but complete essays by experts in their several departments. Handsome illustrations elucidate the text throughout the book. Progressive Medicine more than justifies its title to the Grand Prize awarded to it at the Paris Exposition of 1900: A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica in Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 460 pages, with 81 engravings and one full-page plate. Price, $10.00 per year. Lea Brothers & Co., Philadelphia and New York.

THE WEATHER BUREAU.—United States Department of Agriculture, Report of the Chief of the Weather Bureau, 1899-1900, Washington: Government Printing Office. 4to, pp. 436.

The report almost wholly consists of tabulated observations. But besides the most important duty of the Bureau thus shown, in the forecasting of the weather during the year, the system of observation stations was extended over the West Indies and the Caribbean Sea in 1898, and by co-operation with Mexico over that country in 1899, greatly increasing the field of observation and enabling the Bureau to herald the approach of all dangerous tropical storms. The approach and movement of cold waves and the occurrence of killing frosts and heavy snow within the bounds of the United States were also accurately forecast. Efforts are still in progress for increased extension of the service by telegraphic and cable reports from the Republic of Mexico and the West Indies. The outlook for obtaining advices from these far-off regions within an hour and a half after the observations are made is promising. An observation station was established at Turk's Islands in June, 1900, and regular observations begun July 1st, completing the chain of stations extending from the Lesser Antilles northwestward to Bermuda and the southeastern coast of the United States.

"Eastward of the meridian of Bermuda the Bureau is especially interested in obtaining all possible knowledge of the conditions of the so-called North Atlantic area of high pressure, which extends from the Atlantic coast eastward to the coast of Africa and southern Europe. It is believed that the development of and the paths taken by West Indian hurricanes, the intensity and duration of hot waves, and to some extent the movement of cold waves, depend upon this great area of high pressure, which covers a region larger than the United States."

THE PRINCIPLES OF HUMAN KNOWLEDGE.—By GEORGE BERKELEY, "The Religion of Science Library," No. 48, March, 1901. 25 cents. Chicago: The Open Court Publishing Co.

It is well to keep alive Bishop Berkeley's philosophy, though a century and a half old, as the Open Court Publishing Co. does, not only for its intrinsic merit, but for comparison with modern philosophies. It begins with a sketch of his life. "All his contemporaries agreed with the 'Satirist' in ascribing to Berkeley every virtue under heaven.

"Adverse factions and hostile wits concurred only in loving, admiring and contributing to advance him. The severe sense of Swift endured his visions; the modest Addison endeavored to reconcile Clarke to his ambitious speculations."

This sketch, as well as his Treatise, "Wherein the Chief Causes of Error and Difficulty in the *Sciences, Atheism* and *Irreligion* are inquired into," is interesting reading to-day. And of the latter, scarcely anything could be cited more pertinent to the folly of discussing modern schoolmen than what he said of the schoolmen of his day:

"It were an endless as well as an useless thing to trace the schoolmen, those great masters of abstraction, through all the manifold inextricable labyrinths of error and dispute with which their doctrine of abstract natures and notions seems to have led them into. What bickerings and controversies, and what a learned dust have been raised about those matters, and what mighty advantage has been from thence derived to mankind, are things at this day too clearly known to need being insisted on."

ANNUAL REPORT OF THE SMITHSONIAN INSTITUTION, 1899. Washington: Government Printing Office. 8vo., pp. 672, with many illustrations. Proceedings of the Board of Regents; Report of the Executive Committee, exhibiting the financial affairs, etc., and report of the Secretary, giving an account of the operations and condition of the Institution; general appendix, comprising a selection of miscellaneous memoirs of interest to collectors and correspondents of the Institution and others. The continued excellence of the Institution and of its management is everywhere manifest. The appendix comprehends thirty essays, for the most part showing the latest achievements in the leading subjects of scientific progress, *e. g.*: Some of the Latest Achievements of Science, by Sir William Crookes; Experimental Study of Radio-Active Substances, by H. C. Bolton; The Wave Theory of Light:

Its Influence on Modern Physics, by A. Gornu; Liquid Hydrogen, by Prof. Dewar; Lord Kelvin's Address on the Age of the Earth as an Abode Fitted for Life, by T. C. Chamberlain; Present Condition of the Floor of the Ocean, Evolution of the Continental and Oceanic Areas, by Sir John Murray; Relation of Motion in Animals and Plants to the Electrical Phenomena Which Are Associated with It, by J. Burdon-Sanderson, etc.

YEARBOOK OF THE UNITED STATES DEPARTMENT OF AGRICULTURE, 1900. Washington: Government Printing Office. 8vo., pp. 888. Profusely illustrated.

This volume summarizes the work of the Weather Bureau, the Bureau of Animal Industry, Division of Chemistry, Division of Entomology, Division of Botany, Division of Vegetable Physiology, Division of Pomology, Division of Agrostology, Experimental Gardens and Grounds, Biological Survey, Division of Soils, Division of Forestry, Office of Public Road Inquiries, Office of Experiment Stations, Section of Foreign Markets, Division of Statistics, Division of Publications; every one of which subjects is represented in detail with scientific scrutiny. There is, besides, an Appendix replete with information on various subjects of interest to farmers, including a catalogue of agricultural colleges and other institutions in the United States having courses of study in agriculture, experiment stations, secretaries of State Boards of Agriculture and of agricultural societies and of allied organizations.

RABIES: ITS CAUSE, FREQUENCY AND TREATMENT.—By D. E. SALMON, D. V. M., Chief of the Bureau of Animal Industry.

A brochure of thirty-five pages, reprinted from Year-book of Department of Agriculture for 1900. An account of the nature of the disease, of its prevalence at various times and places in the United States, and its occasional approach to epidemicity, together with its relation to cattle and other animals. How to treat it, and how to *prevent it.* A pamphlet eminently worthy of wide distribution, and of great practical utility to all persons fond of dogs.

WHAT IS A KINDERGARTEN?—By GEO. HANSEN. 16mo., pp. 80. Price, 75 cents. D. P. Elder and Morgan Shepard, San Francisco, Cal., 1901.

An instructive primer for laying out gardens and beautifying dooryards.

CONTEMPORARY LITERATURE.

PUBLIC HEALTH RECORD is a new periodical of good promise, devoted to sanitation and hygiene. A monthly of twenty-two textual pages, published at 30 East 74th Street, New York, at one dollar a year, ten cents a number, under the auspices of the Sanitary and Hygienic Society of the City of New York, composed of the sanitary inspectors and others in the service of the Department of Health. This touch should reflect the *au courant* status of the sanitary condition of the city. The first number, for May—the only one we have received to the time of this writing—contains: "Preservatives in Milk," Dr. Herman Betz; "Value of Vaccination," Dr. E. B. Feeney; "Ship Sanitation," Dr. A. J. Talmage; "Trap Syphonage," H. E. Bramley; "Sanitary Laws of Moses," Dr. G. M. Price; "Side Window Nuisances," Dr. Herman Betz; Sanitary Clippings and Notes.

THE REVIEW OF REVIEWS for June has two important articles on the Buffalo fair—"The Pan-American on Dedication Day," by William H. Hotchkiss, and "Artistic Effects of the Pan-American Exposition," by Ernest Knaufft. Both articles are illustrated from the most recent photographs, and in connection with Mr. Knaufft's article, especially, the wonderful electrical effects at night are reproduced by the photographer, Mr. C. D. Arnold, with striking accuracy. Ten of these remarkable night views, taken especially for the "Review" by Mr. Arnold, accompany Mr. Knaufft's text.

Sylvester Baxter contributes an article on "The Winning War Against Consumption." It is now definitely established, he maintains, that consumption is a curable disease. Like every other chronic malady, if it is permitted to possess itself of the system and complicate itself with other disorders, it is beyond remedy. But taken in time, and dealt with in its incipient stages, recovery is practically assured. When the character of the microbe became known it only remained to subject it to the conditions most unfavorable to its existence. Oxygen destroys it. Its deadliest enemies are pure air and light. Half an hour of sunshine is sure to kill it. And the most efficient treatment is, therefore, that which gives freest play to these agencies.

Hence, hygienic and dietetic methods are of the highest importance. Whatever has been done through medication is of slight value in comparison. Therefore, the great results come when patients are merely subjected to a simple and rational regimen,

whose chief elements are pure air, sunlight, and abundant nutrition under conditions that allow these factors to exert their influence to the greatest possible extent. With the new methods it is no longer held necessary for the patient to seek a climate of the kind that has been supposed to possess some specific property against the disease. The benefits from mild climates are now seen to be due chiefly to the effects of the outdoor life that the climate encourages. But whatever the advantages of such a climate, they are liable to be offset by the depressing influences that follow separation from home and friends, with consequent melancholy. The expense, for the great majority of patients, also bars the way to the change. Therefore, the most desirable treatment, on the whole, is that which keeps the patients near home. This is the conclusion reached by the author of one of the most important works on pulmonary tuberculosis, Dr. S. A. Knopf, of New York, who expresses his thorough disbelief in the specific curative quality of any climate, and therefore would place a sanatorium where it would do the greatest good to the greatest number. He holds that it is essential to the majority of tuberculous patients to be treated and cured in the same, or nearly the same, climate where they will have to live and work after their restoration to health.

THE CENTURY for June is a college number, the opening paper, by Miss Alice Fallows, being an exposition of the delights and difficulties of "Working One's Way Through College," and the two closing "body" articles being devoted to a consideration of "Alleged Luxury Among College Students," the writers—President Hadley of Yale and Provost Harrison of the University of Pennsylvania—agreeing that there is little to excite alarm in present conditions, at least in the institutions over which they respectively preside. Ex-President Cleveland prints here the first of his two Princeton lectures on "The Venezuelan Boundary Controversy," disposing of the half-century which preceded American intervention and the settlement of the dispute.

LONDON'S GREATEST DANGER.

"In London there are at present eight hundred thousand young men," writes W. S. Harwood in this number. "It is demonstrated by the most careful and systematic census effort that fully six hundred thousand of this number do not associate themselves in religious work. It is among these six hundred thousand young men that the work of the London association is most pressed. I asked Mr. Putterill what was the greatest obstacle he had to over-

come in reaching these young men. He told me that it was not the liquor-drinking habit, terrible as is its hold upon the young men of this vast mass, but the appalling prevalence of vice. If half is true that was told me in London about the prevalence of the most degrading habits among the young men of that city, there is little wonder that those in positions to know look with the keenest apprehensions to the future—a future which promises to make the young manhood of London within three generations a physical wreck, if not reinforced by fresher blood from the provinces. Indeed, there will not long be waiting such another wave of apprehension as that which has recently swept over France concerning the social situation in Paris, if some check is not found against the advance of immorality in London."

THE NORTH AMERICAN REVIEW for June contains a rare assortment of timely and interesting articles. H. G. Wells, the author of that fascinating story, "When the Sleeper Awakes," contributes the first of a series of articles, entitled "Anticipations: An Experiment in Prophecy," in which he will endeavor to forecast the conditions of human life and society at the end of the present century. Dr. W. A. P. Martin, President of the Imperial University of China, discourses pleasantly on

"THE POETRY OF THE CHINESE."

Dr. Martin enlarges on the characteristics of the Chinese lyric, tells something of the more famous poets, and gives a number of specimen poems which he has translated into English verse. Among these is one which may suggest Poe's "Raven" to the reader. It was written by Kia Yi, a Minister of State:

"Betwixt moss-covered, reeking walls,
An exiled poet lay—

"On his bed of straw reclining,
Half despairing, half repining—
When, athwart the window sill,
In flew a bird of omen ill,
And seemed inclined to stay.

"To my book of occult learning
Suddenly I thought of turning,
All the mystery to know
Of that shameless owl or crow,
That would not go away.

" 'Wherever such a bird shall enter
'Tis sure some power above has sent her,'
So said the mystic book, 'to show
The human dweller forth must go.'
But where, it did not say.

"Then anxiously the bird addressing,
And my ignorance confessing,
'Gentle bird, in mercy deign
The will of Fate to me explain.
Where is my future way?'

"It raised its head as if 'twere seeking
To answer me by simply speaking;
Then folded up its sable wing,
Nor did it utter anything;
But breathed a 'Well-a-day!'

"More eloquent than any diction,
That simple sigh produced conviction;
Furnishing to me the key
Of the awful mystery
That on my spirit lay.

" 'Fortune's wheel is ever turning,
To human eye there's no discerning
Weal or woe in any state;
Wisdom is to bide your fate.'
That is what it seemed to say
By that simple 'Well-a-day.' "

THE JUNE ST. NICHOLAS contains a touching tale, as well as an amusing one, that Josephine Daskam tells with considerable vivacity. "The Fireman" is the hero of the current chapter, by Cleveland Moffett, on

"CAREERS OF DANGER AND DARING."

"In all its history," he says, "I suppose the world has seen no heroes like these, who join the skill of gladiators with the valor of crusaders. Does that sound like exaggeration? I should call it rather understatement."

As illustrating the things firemen do every day, and do gladly, he gives some incidents of one particular fire that happened in New

York on St. Patrick's Day, 1899. It was a pleasant afternoon, and Fifth Avenue was crowded with people gathered to watch the parade. A gayer, pleasanter scene it would have been hard to find at three o'clock, or a sadder one at four.

Let us see how Hook and Ladder 21 came. She was the mate of the fire-tower, and the rush of her galloping horses was echoing up the avenue just as Battalion Chief John Binns made out a woman in a seventh-story window on the Forty-sixth Street side, where the fire was raging fiercely. The woman was holding a little dog in her arms, and it looked as if she were going to jump. The chief waved to her to stay where she was, and running toward the truck, motioned it into Forty-sixth Street. Whereupon the tiller-man at his back wheel did a pretty piece of steering, and even as they plunged along, the crew began hoisting the big ladder. Such a thing is never done, for the truck might upset with the swaying; but every second counted here, and they took the chance.

As they drew along the curb, Fireman McDermott sprang up the slowly rising ladder, and two men came behind with scaling ladders, for they saw that the main ladder would never reach the woman. Five stories is what it did reach, and then McDermott, standing on the top round, smashed one of the scaling-ladders through a sixth-story window, and climbed on, smashed the second scaling-ladder through a seventh-story window, and five seconds later had the woman in his arms.

Almost at the same moment, the crowd on Forty-seventh Street were gasping in admiration of a rescue feat even more thrilling. On the roof, screaming in terror, was Kate Flannigan, a servant, swaying over the cornice, on the point of throwing herself down. Then out of a top-floor window crept a little fireman, and stood on the fire-escape, gasping for air. Then he reached in and dragged out an unconscious woman and lowered her to others, and was just starting down himself, when yells from the street made him look up, and he saw Kate Flannigan. She was ten feet above him, and he had no means of reaching her.

The crowd watched anxiously, and saw the little fireman lean back over the fire-escape and motion and shout something to the woman. And then she crept over the cornice edge, hung by her hands for a second, and dropped into the fireman's arms. It is isn't every big, strong man who could catch a sizable woman in a fall like that and hold her, but this stripling did it, because he had the nerve and knew how. And that made another life saved.

THE DELINEATOR for July takes time by the forelock, in the early issue of a marvellously beautiful illustration of the grounds and buildings of the PAN-AMERICAN EXPOSITION. No other publication, to our knowledge, compares with it for detail of delineament and attractiveness for would-be visitors to the Exposition who would first gain an insight. And this is besides the beautiful illustrations of styles and fashions, and all about summer fabrics, to meet the constant desire of ladies who would be at the top of fashion.

COULDN'T UNDERSTAND.

"Ah, Pat, Pat," said a schoolmistress to a thick-headed urchin, into whose muddy brain she was attempting to beat the alphabet, "I'm afraid you'll never learn anything. Now, what's that letter, eh?"

"Sure, and I don't know, ma'am," replied Pat.

"Thought you might have remembered that."

"Why, ma'am?"

"Because it has a dot over the top of it.'

"Och, ma'am, I mind it well; but sure I thought it was a speck."

"Well, now, remember, Pat, it's I."

"You, ma'am?"

"No, no! not U but I."

"Not I, but you, ma'am—how's that?"

"Not U, but I, blockhead!"

"Och, yis, faith; now I have it, ma'am. You mean to say that not I but you are a blockhead?"

"Fool! fool!" exclaimed the pedagoguess, bursting with rage.

"Just as you please," quietly responded Pat, "fool or blockhead—it's no matter, so long as yer free to own it!"

LARGE SNAKE.—An Indian came to a certain "agency," in the northern part of Iowa, to procure some whisky for a young warrior that had been bitten by a rattlesnake. At first the agent did not credit the story, but the earnestness of the Indian, and the urgency of the case, overcame his scruples, and turning to get the liquor, he asked the Indian how much he wanted.

"Four quarts," answered the Indian.

"Four quarts?" asked the agent in surprise; "so much as that?"

"Yes," replied the Indian, speaking through his set teeth, and frowning as savagely as though about to wage war against the snake tribe, "four quarts—*snake very big*."

THE SANITARIAN.

AUGUST, 1901.

NUMBER 381.

THE PROGRESS AND TENDENCY OF HYGIENE AND SANITARY SCIENCE IN THE NINETEENTH CENTURY.

Oration on State Medicine at the Fifty-second Annual Meeting of the American Medical Association, St. Paul, Minn., June 4-7, 1901.

By GEORGE M. KOBER, M. D., Professor of Hygiene, Georgetown University, Washington, D. C.

From the "Journal of the American Medical Association."

Hygiene is a department of medicine whose object is the preservation and promotion of health and deals, therefore, with all the factors likely to influence our physical welfare. It is not an independent science, but rather the application of the teachings of physiology, chemistry, physics, meteorology, pathology, sociology, epidemiology and bacteriology to the maintenance of the health and life of individuals and communities. The subject is very properly divided into personal and public hygiene. In the former the doctrines are applied to individuals; in the latter to communities and States.

This branch of medicine has received such an impetus within the last few decades that many persons regard it of modern origin; such, however, is not the case, for on turning to early history we almost invariably find that the health of the population has been made a subject of legislation. Hygiene was practised by the Egyptians, the old Indians and Hebrews, and a study of the habits of the primitive peoples shows that a desire to prevent disease is innate to all men.

The Greeks and Romans paid special attention to the physical culture of their youth. They also paid much attention to the

water-supply, and Athens was provided with sewers at an early period of her history.

The teachings of Hippocrates, 400 B. C., doubtless bore many fruits, and whether it is true or not, as stated by Galen, that he ordered, during a pestilence at Athens, aromatic fumigation and large fires in the streets, we have at least his writings on air, water, soil, habitations and occupations, and his views of local and seasonal influences on sporadic and epidemic diseases. In Homer's "Odyssey," reference is made to Ulysses purifying his house with burning sulphur, and Aristotle, in his "Politica," shows his sanitary acumen when he says: "The greatest influence upon health is exerted by those things which we most freely and frequently require for our existence, and this is especially true of water and air."

The Romans, amidst their military operations, found time to construct the "Cloaca Maxima" about 2,400 years ago, which not only served for the removal of refuse, but also helped to drain many of the marshes, and constitutes the principal sewer of modern Rome. Aqueducts were made to cover miles upon miles of the surrounding plains, and their splendid ruins, many of which have been restored and are now used for their original purpose, attest the munificence and abundance with which the first of sanitary requisites was supplied to the Eternal City. It is stated that between 400 B. C. and 180 A. D., about 800 public baths were established, among them the "Thermæ Caracallæ," which alone would accommodate 3,000 bathers at one time.

During the reign of the Cæsars, attempts were made to drain the Pontine Marshes. Sanitary officials and physicians to the poor were appointed, and homes for poor girls and orphans were established. In the meantime the true spirit of Christianity asserted itself, and we read of the establishment of hospitals as early as the fourth century. These were speedily followed by infant and orphan asylums and homes for the poor and incurables. During the Middle Ages sanitation received a decided check; ignorant and brutal prejudices appear to have been the ruling spirits, and for many reasons it was the most unsanitary era in history.

PESTS AND UNSANITARY CONDITIONS OF THE MIDDLE AGES.

About this time most of the towns in Europe were built in a compact form, surrounded with walls; the streets were narrow and often winding for defensive purposes, shutting out light and air from the houses. The accumulation of filth was simply frightful.

Stables and houses were close neighbors, human filth was thrown on the streets or manure heap. The dead were buried within the churchyards. Sewers and aqueducts having been permitted to fall into disuse, the inhabitants were compelled to resort to wells with polluted subsoil water. All the conditions were favorable for the spread of infectious diseases and in the fourteenth century alone the Oriental or bubonic plague, according to Hecker, carried off one-quarter of the population of Europe, or over 25,000,000 victims.

Although this disease had been described as early as the third century, B. C., a lamentable state of ignorance is shown, when we remember that the majority of people regarded the plague as the dispensation of God's providence, an evidence of Divine wrath, which they hoped to allay by all sorts of self-inflicted punishments, and the Passion Plays of Oberammergau and elsewhere originated about this time. Others accused the Jews of being the cause, and hundreds were burned at the stake until Pope Urban IV placed them under his special protection. The Faculty of Paris attributed the epidemic to the conjunction of planets on a certain day in 1345, and the Faculty of Leipsig, with equal gravity, asserted that it was connected with earthquakes, unseen waves of air, inundations, etc. Venice, alone of all Europe, took a sensible view of the matter, and for the first time in history, in 1348, appointed three guardians of public health, and the rules adopted later to isolate infected houses and districts for forty days gave rise to the term quarantine—from *quaranta giorni.*

The repeated invasion of the Oriental pest appears to have everywhere compelled some sanitary efforts, and an imperial decree, in 1426, required the appointment of city physicians throughout Germany, whose duty it was to adopt preventive measures. A city ordinance of Nürnberg, in 1562, gives detailed directions as to the quality of bread, beer and wine offered for sale, the cleaning of streets and houses, the disposition of infected clothing and bedding, the fumigation with sulphur and straw of pest-houses, etc.

In 1685 Prussia established a central medical bureau, and appointments of health officers and privy medical counsellors were made, whose duties consisted in advising the men entrusted with the care of the Government on matters relating to public health, and some of these titles are still in vogue in Europe. At the beginning of the eighteenth century, Prussia, upon being threatened with an invasion of the bubonic plague from Austria, created the "Collegium Sanitatis," popularly called the "Pest College,"

which was really the beginning of the present State Board of Health. In 1762 a sanitary council was established in every Prussian province, for the prevention of disease among men and animals. About the same time sanitary improvements in the way of widening streets for the purpose of supplying more air and light to the habitations, and better methods for the collection and removal of the wastes of human life, were introduced; but, broadly speaking, at the close of the seventeenth century the habits of the people in Europe were generally filthy and in striking contrast to those observed among the most untutored savages of the present day.

In Madrid, we are told by Barcome, in his history of epidemics, "that not even a privy existed in 1760. It was customary to throw the ordure out of the windows at night, and it was removed by scavengers the next day. An ordinance having been issued by the king that every householder should build a privy, the people violently opposed it as an arbitrary proceeding, and the physicians remonstrated against it, alleging that the filth absorbed the unwholesome particles of the air which otherwise would be taken into the human body. His majesty, however, with commendable zeal, persisted; but many of his citizens, in order to keep their food wholesome, erected privies close to their kitchen fire-places."

With such unsanitary conditions we need scarcely be surprised that the mortality in towns was greater than their birth-rate, and that the city population had to be recruited continually from the country. Toward the close of the eighteenth century many sanitary reforms were effected, however, especially in connection with infant and orphan asylums, and the management of schools and prisons. Of special importance is the brilliant discovery, or rediscovery, of vaccination by Jenner in 1796.

PROGRESS OF SANITATION IN THE NINETEENTH CENTURY.

The nineteenth century can boast of many advances in hygiene, particularly since the European invasion of cholera in 1830. The English towns which had been visited by this disease and those fearing similar scourges were willing to profit by their sad experience, and freely instituted sanitary reforms in the establishment of sewers, public water supplies, sanitary homes, etc.

The example of England was followed by all civilized nations, with similar results. The efforts of sanitation, as taught by Dr. Parkes, were demonstrated during the Crimean War and, as beautifully expressed by Virchow during our Civil War, reached "the highest point in humane efforts ever attained in a great war,"

and, we may proudly add, have even been excelled during our late Spanish-American War.

PROGRESS OF SANITATION IN THE UNITED STATES.

While the people of the United States were not slow in adopting and originating sanitary measures of great value, our ideas of personal liberty, guaranteed to us by the Constitution, evidently prevented early legislation in matters of public health, for fear that such legislation might affect the personal habits of the citizen and lessen his freedom of action. Dr. Samuel W. Abbott, in his masterly exposition of "The Past and Present Condition of Public Hygiene and State Medicine in the United States," records, however, the gratifying fact that the early colonists recognized the need of preserving their records, which constitute the foundation stone of public hygiene, by enacting a law in 1639 "that there be records kept of the days of every marriage, birth and death of every person in this jurisdiction."

The importance of vital statistics is not fully appreciated at the present day, and yet, as remarked by Dr. Billings, "when we wish to study the healthfulness of a city, whether it is getting better or worse, or judge correctly the effect of certain sanitary laws, we should not only know the number of deaths, but also the amount and character of the prevalent disease, together with accurate information as to the number of population at different ages." It is a matter of regret, therefore, that even now only ten States, Connecticut, Delaware, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Rhode Island and Vermont, have anything like a satisfactory system of vital statistics.

According to Abbott: "Up to the close of the eighteenth century and for several decades of the nineteenth, almost the only health legislation which was enacted in the different States in the Union consisted in a few laws relating to small-pox, since this pestilence was scarcely ever absent for many years at a time from any city or village, until after the general introduction of vaccination."

Dr. Waterhouse, of Cambridge, having secured a supply of vaccine lymph from Dr. Jenner, introduced vaccination in Boston in 1800, and Dr. Seaman in New York in 1801. In the same year President Jefferson received some virus from Dr. Waterhouse, and was vaccinated by Dr. Grant, of Georgetown.

The invasion of cholera from Canada in 1832, and the epidemic of 1848-1849 here, as in Europe, aroused public interest in sani-

tary reforms, and the Legislature of Massachusetts in 1849 appointed a commission to make a sanitary survey of the State, and we are told by Dr. Abbott "that this was done none too soon, for in that year the general sanitary condition of the State, as shown by the report of the commission, was deplorable and the death-rate unusually high. Only a few towns had then introduced public water-supplies. Cholera was beginning to appear again, and dysentery and other infectious diseases were more destructive than they had been for many years."

New Orleans, having lost 8,000 victims of cholera in 1832, out of a population of about 55,000, and anxious to maintain a quarantine, secured the enactment of a law in 1855 for the establishment of a State Board of Health; in 1869 a more comprehensive board was established in Massachusetts, followed in 1870 by California, since which time nearly all of the States and Territories—42 in number—have followed the example. *Pari passu* and in many instances preceding the establishment of State Boards of health, sprang into existence our local boards of health, who adopted measures for the control and restriction of infectious diseases, for the abatement of local nuisances, for the sanitary inspection of the food-supply, schools, public buildings and institutions and tenements; street cleaning and removal of refuse, registration of vital statistics, supervision of burials and of municipal water-supply, sewerage, and sewage disposal, care of bathing establishments, regulation of offensive trades, etc.

EFFECTS OF VOLUNTARY ORGANIZATION ON SANITATION.

In September, 1872, the American Public Health Association was organized; in 1873, the Section on State Medicine of the American Medical Association was created; since then the American Climatologic Association, the Sanitary Council of the Mississippi Valley, the American Sanitary Association, and the American Health Resort Association have been organized, and numbering, as they do, among their members some of the best minds in the profession, much good has been accomplished by these bodies, and the so-called "sanitary conventions" in molding public opinion and in framing and recommending health laws. There is no doubt, however, that all these organizations were stimulated into existence by the lofty tenets of our Code of Ethics, in which the duties of the profession to the public were prescribed as early as 1847.

Indeed, the American Medical Association, according to Dr.

N. S. Davis, Sr., gave prominent attention to State medicine and sanitation from its first meetings. At the second annual meeting, in 1849, standing committees were appointed on forensic medicine and on hygiene and reported annually on these topics and on meteorology, medical topography and epidemic diseases until 1860, when work in sections was commenced. Dr. A. N. Bell, of New York, delivered the first address on State medicine in general session of the Association in 1874, followed in 1875 by Dr. N. I. Bowditch, of Boston. In this connection, I may say that there is need of reliable information on the geographic distribution of diseases like goiter, cretinism, etc., and county medical societies would contribute much to the common fund of knowledge by placing on record information of this character.

NATIONAL BOARD OF HEALTH.

The cholera epidemic of 1872 and 1873 resulted in the appointment of a commission by Congress. This, together with the yellow fever epidemic of 1878 in the Southern States, affecting, according to Sternberg, over 74,000 persons, with 16,000 deaths, called attention to the necessity of some central sanitary organization. In March, 1878, Congress created a National Board of Health, whose duty it was to make investigations into the causes and means of prevention of contagious and infectious diseases, to indicate measures of national importance and to be a centre of information for all matters relating to public health. For want of appropriation, this important body has ceased to exist, and since 1883 the duties relating to international and interstate quarantine have been discharged by the Surgeon-General of the United States Marine-Hospital Service; his bureau, apart from the management of hospitals and stations for the care of sick and disabled seamen of the merchant marine, has also undertaken the collection and dissemination of mortality statistics and sanitary information, scientific investigation into the causes of disease, the physical examination of immigrants under the law, excluding those affected with contagious disease—service in the office of consuls at foreign ports to assure the accuracy of bills of health—and other miscellaneous duties. Since Congress has failed to act upon the President's repeated recommendation and the petition of numerous medical socities for the creation of a national health establishment, there is no good reason why the scope of duties and powers exercised by the Marine-Hospital Service should not be enlarged. Indeed, the last Congress appropriated sufficient money for the erection of a

laboratory "for the investigation of infectious and contagious diseases and matters pertaining to the public health," which marks the beginning of a new era in national sanitary legislation.

NATIONAL AND INTERNATIONAL QUARANTINE.

The question of an efficient system of national and international quarantine against Asiatic cholera, yellow fever, small-pox, typhoid fever, bubonic plague, leprosy, has engaged the attention of sanitarians for years, especially since it became known that these diseases, particularly cholera, are generally carried along the highways of travel and commerce. Special efforts were made after the completion of the Suez Canal and other rapid transit facilities, to guard Europe from the invasion of cholera from India, and since 1892 these efforts have been quite fruitful. At all events, with efficient quarantine regulations involving inspection of vessels, passengers and crews, the detention of the sick and disinfection of all others, including personal effects, cargoes and vessels, and proper notification, we have been enabled to keep these diseases from our shores, and if other nations do the same, they should be restricted to their original home. General Wyman's plan, as outlined in his address before the Pan-American Medical Congress, contemplates an international system of sanitation; while his proposition refers especially to yellow fever in the Western Hemisphere, it is equally applicable to the home of cholera and the Oriental plague.

In the light of the recent researches by Reed and Carroll as to the transmission of yellow fever by means of mosquitoes, our views concerning quarantine and disinfection in this disease may have to be modified, but in the meantime the fight against the mosquitoes will go on; whether this will be effectually accomplished by insecticides and screens, or the more rational method of drainage of the soil, remains to be seen; in either event malarial countries will likewise be benefited.

HAS HUMAN SUFFERING BEEN MITIGATED AND HUMAN LIFE GREATLY PROLONGED BY EFFORTS IN SANITATION?

Our answer is an emphatic "Yes." Professor Finkelnburg, of Bonn, estimates that the average length of human life in the sixteenth century was only between 18 and 20 years; at the close of the eighteenth, it was a little over 30 years, while to-day it is over 40 years; indeed, the span of life since 1880 has been lengthened about six years, as shown by statistics, in Mulhall's "Dictionary of Statistics" (fourth edition, London, 1899).

The mortality of London between 1660 and 1678 was 80 per 1,000 of inhabitants; from 1728 to 1780, 51 per 1,000; from 1801 to 1835 it was still 29, while at the present time it averages between 17 and 19 per 1,000.

INFLUENCE OF SEWERS AND PUBLIC WATER-SUPPLIES.

Without underestimating the brilliant achievements of Jenner's discovery of vaccination in 1796, which as a preventive measure has saved millions of lives, no two factors have contributed so much to the general result as the improvement of the air we breathe and the water we drink. Indeed, we have ample evidence that with the introduction of sewers and public water-supplies, the general mortality in numerous cities, during the past 40 years, has been reduced fully one-half, the good effects being especially shown by a marked decrease in the number of cases of typhoid fever, diarrhœal diseases and tuberculosis. The vital statistics of Great Britain furnish the proof. The mortality at Salisbury within the last 30 years has been reduced from 40 to 16 per 1,000; at Dover, from 28 to 14 per 1,000; at Rugby, from 24 to 10 per 1,000; at Croydon, from 28 to 15 per 1,000, and at Matlock, from 18 to 9 per 1,000.

The history of every sewered city shows a lessening of the typhoid death-rate subsequent to the construction of the sewers, and that the typhoid rate is always higher in sections supplied with privy pits and box privies, than in the houses connected with sewers. In 1895 the speaker pointed out that typhoid prevailed in the city of Washington and suburbs in 1 of 81 houses with privies, and in only 1 in 149 of those connected with sewers, and the health officer of Nottingham has since then presented similar evidence. The only reasonable explanation for this is that sewers carry away the filth that otherwise would contaminate the soil and ground water, but even if there were no wells, these makeshifts are still a source of danger in so far as they favor the transmission of the infection by means of flies, nor can the possibiltiy be ignored that the germs in leaky or overflowing boxes may reach the upper layer of the soil and, with pulverized dust, gain access to the system. This conclusion, and the agency of flies in carrying the germs from box privies and other receptacles from typhoid stools to the food-supply, was enunciated in my report in 1895, and appears to have found ample support in the experience of the late Spanish-American War.

According to Dr. Abbott, the number of towns in the United

States before 1800 having a public water-supply was only 16, supplying about 2.8 per cent. of the existing population; in 1850 there were only 83 public waterworks, supplying about 10.6 per cent. of the census population; in 1897 the total number was 3,196, supplying about 41.6 per cent. of the population.

A summary of the evidence on this subject reveals the significant fact that cities, both at home and abroad, in which there has been the most marked decrease in typhoid fever death rate are those in which a pure supply has been substituted for a pre-existing contaminated one. Thus, for example, the typhoid fever death-rate in Boston in 1846-1849 was still 17.4 per 10,000; in 1890-1892 it had fallen to 3.2 per 10,000, the city having in the meantime expended $25,000,000 on its water-supply. The typhoid fever death-rate in Chicago from 1890 to 1892 averaged 12.5 per 10,000. After improving the water-supply it fell with every step in improvement until last year it was only 1.9 per 10,000, a total reduction of 84.8 during the decade. The rate from this disease in Lawrence, Mass., for 5 years prior to 1893, was 12.7 per 10,000. After the establishment of sand filters, in September, 1893, the rate fell during the first 12 months to 5.2 per 10,000.

Munich was notorious for excessive typhoid fever death-rate, it being 29 per 10,000 in 1856. With the introduction of a pure water-supply and improved sewer system, it has fallen to less than 2 per 10,000. The experience of London, Berlin, Vienna, Albany and a host of other cities has been precisely the same.*

SEWAGE DISPOSAL AND RIVER POLLUTION.

When we remember that in 1893 41 per cent. of our population lived in towns having public water-supplies, and only 28.7 per cent. in sewered towns, we fear that the municipal authorities have failed to recognize the necessity that a system of public sewerage must go hand in hand with the public water-supply, the neglect of which simply compels recourse to the various makeshifts for the collection and removal of excreta, and leads to soil pollution and all the other evils already referred to.

In view of the fact that self-purification of rivers is a slow and uncertain process, and the streams once polluted with excrementitious matter can not be considered a safe water-supply, it is high

*In 25 cities using unfiltered water the average typhoid death-rate is still 7.7 per 10,000; in 5 American cities supplied with water filtered by the American process, the rate is 5.5, against a rate of 1.1 per 10,000 in cities supplied with water filtered by the natural or English method. The average rate of 5 cities in Europe supplied with mountain springs or deep wells from unpolluted source is only 0.7 per 10,000.

time for civilized communities to take steps toward removing the danger to be found in rivers which are the sewers and at the same time the sources of public water-supply.

We know, from statistics collected by the Marine-Hospital Service, that the towns and cities located on the banks of the Ohio, Potomac, Mississippi, Merrimac, Connecticut, Missouri, the Red, the Columbia and Wabash rivers show a marked prevalence of typhoid fever, confirming what has elsewhere been proved, that this disease, as also cholera, dysentery and diarrhœal diseases, can be carried from one town or city to another by means of water courses. There were probably no fewer than 35,000 deaths caused by typhoid fever alone throughout the United States last year, and, based upon an estimated mortality of 10 per cent., it is within reason to assume a yearly prevalence of 350,000 cases of this disease. The average duration of a case of typhoid fever is not less than 30 days. If we calculate that an average of $1 a day is expended for care, treatment and loss of work, and that the value of a human life is $5,000, we have a total loss in the United States of $185,500,000 per annum, from one of the so-called preventable diseases. Reduce the prevalence of this single disease one-half, which has been accomplished in England, and the oft-recurring question "How is it our fathers got along without these so-called modern improvements?" will be satisfactorily answered from an economic point of view.

One of the most pressing needs is an investigation into the pollution of water-supplies when such pollution affects or threatens to affect the sanitary condition of the people of more than one State, because the individual States are powerless to protect themselves against the misdeeds of their neighbors. Mr. Barthold's bill for the appointment of a river pollution commission was defeated; yet that same Congress appropriated $40,000 for the extermination of the gipsy moth. England enjoyed the benefit of such a commission as early as 1855, and, in order to prevent, remedy and remove the danger of polluted water-supplies, adopted a comprehensive system for the disposal of sewage and water filtration, the fruits of which have already been referred to.

No community or individual has a right to pollute streams used for public water-supplies any more than a man has to contaminate his neighbor's well. This principle is very well appreciated by some of the nations in Europe. Thus the inhabitants of a town in Belgium suffered from the effects of a river polluted by the French, and the French Government not only compelled the offending

town to dispose of its sewage by irrigation, but also granted a subsidy for this purpose.

In the interest of public health it is to be hoped that every State in the Union will take steps toward the prevention of the river pollution, except when towns are located close to the sea, and no lower towns are obliged to use the water for drinking purposes.

In 1878 the British Government appointed a committee to inquire into the several methods of sewage disposal and concluded that it can be best and most cheaply disposed of by the process of land irrigation for agricultural purposes, but as this is not always practicable, other modes of dealing with sewage have been proposed.

It is a gratifying fact that within the past 10 or 12 years over 100 communities in the United States have established plants for the disposal of sewage. The first attempt was made in 1872 at the State Insane Asylum, Augusta, Me., since which time 78 plants for the disposal by irrigation, and 15 by chemical treatment, have been established, and over 40 more projected.

PURE FOOD AND DRUG LEGISLATION.

The first movement toward securing comprehensive legislation against the adulteration of foods and drugs in this country was made in 1879. This is all the more surprising because Dr. Mann, in his "Medical Sketches of 1812," remarks that "the bread on the Niagara was made of damaged flour, such as was either not nutritious or absolutely deleterious." It was believed also that the flour contained in some instances an earthy substance, and that this adulterating substance was plaster-of-paris. Again, during the Civil War, as early as the winter of 1861-62, an extract of coffee furnished the troops in the vicinity of Alexandria produced nausea and vomiting, and subsequently a Government contractor, for having practised food adulteration, was sentenced to a protracted imprisonment.

Instances, therefore, were not wanting pointing to the necessity of such laws; nevertheless, it was not until 1881 that 3 States —New Jersey, New York and Michigan—passed laws to prevent the adulteration of food and drugs. The law in New York commenced in the summer of 1882. At the close of the year, 286 samples of food and drugs had been submitted to the public analyst for examination, of which 194 had been reported on. Of 119 samples of food, 50 were found adulterated; while of 75 samples of drugs, 32 were adulterated.

Since 1883 quite a number of States have enacted similar laws, but I regret to say that in spite of the absolute necessity for national legislation, which has been agitated ever since 1892, so far every bill presented to Congress has failed to become a law, and food adulterated in one State can be taken to another and sold. It would lead me entirely too far even to touch upon all the frauds which are daily perpetrated. Some adulterations are harmful, others are not. I will simply refer to a very universal article of food, viz., milk. New York City obtains its milk supply from 5 States, and it amounted in 1876 to nearly 729,000 quarts a day. Analysis of the milk sold some years ago showed an average dilution with 33 per cent. of water. The State inspector found 12 per cent. water added and 20 per cent. of cream removed, the fraud amounting to over $10,000 a day. The results in St. Louis, Chicago and elsewhere were similar, and indicated the desirability of stringent laws to protect the pocket of the consumer, but when we remember the frightful infantile mortality, and the fact that the speaker has recently presented his conclusions, based upon 195 epidemics of typhoid fever, 99 of scarlet fever and 36 of diphtheria, and that 52 of these outbreaks occurred in this country since 1882, we see at once that the milk traffic should be under strict sanitary control.*

Forty-two States and Territories have enacted laws to regulate the sale of poisons, but a careful study shows that they should be amended, and greater restriction placed on the sale of poisons generally. A recent investigation by a committee of the Medical and Surgical Society into the extent of the opium and drug habit in the District of Columbia developed some interesting facts, and led to the conclusion that one class of subjects have developed the opium habit by the use of the milder preparations of opium and some of the various proprietary or secret remedies commonly employed as domestic remedies, such as paregoric, McMunn's elixir, chlorodyne, blackdrop, soothing syrup, diarrhœa mixtures, painkillers, etc. Those of another class have evidently acquired the habit by the constant use of prescriptions containing opium, or its preparations, for the relief of pain, the individuals being at first quite unconscious of the enslaving nature of the drug. Still another class of persons belong to the moral degenerates of fast men and women who have acquired the habit by contact with

*The results achieved by the health officers of every large city, notably by Reynolds, of Chicago, Wende, of Buffalo, and Woodward, of Washington, in the reduction of infantile mortality, amounting in some instances to over 50 per cent., show the advantage of pure food legislation.

opium habitués, including opium smokers, and through solicitation, invitation and persuasion, have fallen victims to the vice. Since the opium habit is often established by the unauthorized and indiscriminate renewal of prescriptions containing opiates, the New York Legislature very wisely enacted, in 1886, a law that no pharmacist shall refill more than once prescriptions containing opium or morphine, or preparations of either, in which the dose of opium shall exceed one-fourth grain, or morphine, one-twentieth grain, except with the verbal or written order of a physician.

It is clearly the duty of the State to close opium dens and restrict the sale of poisons, and in regard to the sale of patent and proprietary medicines containing poisonous drugs, the contents should be expressed on the label and the word "poison" added.

PATENT AND PROPRIETARY MEDICINES.

By the term patent medicine, as properly employed in this country, England and Europe generally, it must be understood that the composition is known and can be seen at the Patent Office. The proprietary medicine is a secret preparation protected by a trademark in this country, and hence preferred by the owner, but both are vaguely termed by the public patent medicines. Up to December 10, 1900, the United States Patent Office had issued patents on the following: Disinfectants, 321; extracts, 250; hair dyes and tonics, 48; insecticides, 180; internal remedies, 376; plasters, 56; topical remedies, 371; veterinary, 78. Trademarks: Drugs and chemicals, 319; medical compounds, 5,974, and increasing at the rate of about 250 a year.

The proprietary medicines are subject to the control of the State authorities, and if containing alcohol in sufficient quantity to be intoxicants are subject to internal revenue laws; but so far as my knowledge extends, little or nothing has been done in this country and in England to control the sale of secret remedies. Dr. G. Danford Thomas, Coroner of London and Middlesex, before the International Congress of Hygiene, in 1891, very justly urged that all proprietary medicines should be under the patent laws, because the composition is at least disclosed; he would abolish licenses to sell them and confine the sale to chemists and druggists only. In these matters we could certainly profit by the example of the Japanese, Italian, French and German laws. In the interest of public health the profession should demand adequate legislation; as it is now, hundreds of these proprietary preparations, the composition of which need not even be disclosed to the Patent Office, are advertised in medical journals.

INDUSTRIAL HYGIENE.

The relations of occupation to health and life were studied as early as 1700 by Ramazzini, an Italian physician, and since then numerous monographs have appeared. We know to-day that persons habitually engaged in hard work, especially in factories and indoors, present a higher mortality than persons more favorably situated, and that the character of occupations influences, to a great extent, not only the average expectation of life, but also the prevalence of certain diseases. We know, for example, that tuberculosis is much more frequent among persons engaged in dust-inhaling occupations, and that the sharp, angular particles of iron and stone dust are more liable to produce lesions of the respiratory mucosa than coal, flour, grain and tobacco dust. We know, too, that certain establishments, like slaughter-houses, glue, soap and candle factories, chemical factories, etc., are more or less productive of noxious and offensive gases, and that workers in lead, mercury, arsenic, phosphorus, poisonous dyes, etc., suffer especially from injurious effects, and that other occupations, such as mining, railroading and contact with moving machinery, involve special danger to life and limb.

For all these reasons the laboring classes need special protection, and in order to render this efficient, it must be provided for by the enactment and enforcement of suitable laws. In 1864, 1867 and 1870 England enacted the so-called factory laws. According to Miss S. S. Whittlesey's "Essay on Massachusetts Labor Legislation," child labor, here, as in England, was the first aspect to receive attention in legislation as early as 1836. The first law as regards safety and sanitation was enacted in that State in 1877, since which time, from information kindly furnished by the Hon. Carroll D. Wright, of the U. S. Department of Labor, 32 States have enacted similar laws, including legislation requiring seats to be furnished saleswomen in stores and shops. Indeed, in some of the States the latter requirement is the only sanitary regulation. As a result of these laws, the majority of which were enacted during the last decade, commendable progress has been made in the way of ventilation, heating, lighting, removal of dust and injurious gases, means of escape in case of fire and prevention of injuries by moving machinery.

It is quite true there are other factors which affect the health and longevity of wage-earners adversely. So, for instance, unsanitary dwellings, faulty nutrition—the results of badly prepared food and cold lunches—can not fail to lower the power of resist-

ance to disease, especially when the individual, in consequence of these very causes, has also become a victim of the alcohol habit.

SANITARY DWELLINGS FOR WAGE-EARNERS.

No field affords better opportunity for philanthropic work than the erection of sanitary homes for wage-earners at reasonable rentals, the encouragement of cookery schools, the establishment of sanitary lodgings, model eating-houses and other betterments of industrial conditions.

The vital statistics of London show that the mortality in the improved dwellings for wage-earners is far below the general mortality of the city, the difference being specially marked in the infantile mortality; the general average during the five years ending December, 1890, was 153 per 1,000, while in the "George Peabody" and the "Metropolitan Dwellings" it was only 136 and 121 respectively.*

RURAL HYGIENE.

When we consider the fact that over 70 per cent. of our population reside in rural districts, that the "bone and sinew" of these are engaged in agricultural pursuits, and that they do not enjoy the benefits of enforced sanitation by local health boards, we see at once the desirability of the family physician extending useful suggestions on healthful building sites and homes, disposal of house wastes, the importance of a pure water supply, wholesome and properly cooked food, etc. As it is now, the diet is faulty, especially the hot biscuits and greasy fried dishes, while wells and privies are often dangerous neighbors. The undue prevalence of typhoid fever in rural districts could be materially checked by disinfecting the stools with three times the volume of boiling water, and the adoption of the earth closet system. This is all the more im-

*At a recent meeting of the American Social Science Association, held in Washington, April 18, 1901, Mr. J. H. Patterson, Dayton, Ohio, read a paper on factory sanitation and described a large manufacturing plant of which he is the head, and their close adherence to the principles of hygiene and the uplifting of mankind. The interior of the factory is painted in cheerful colors, extra windows were made to give light, forced ventilation to afford plenty of fresh air, and all dust and acid fumes are carried away by exhaust fans. Bathrooms and well-furnished toilet-rooms are on all the floors. All seats have backs. Clean aprons are furnished by the company, and a dining-room where hot meals are served, and a course in domestic economy is conducted. The grounds around the factory, and the houses of the employes, are healthful and attractive. "We have demonstrated," said Mr. Patterson, "that this system pays the employe, the manufacturer and the buyer; in the health of one, profit of the second, and the improved quality of the product purchased by the third." Bulletin No. 31, Department of Labor, November, 1900, contains an article on betterment of industrial conditions, showing what has elsewhere been accomplished, every effort being in the right direction, except that free medical attendance is being furnished by certain companies, involving a contract system with physicians, which ought never to gain a foothold on American soil, because it has proved a bane to the profession elsewhere.

portant since infection is often spread through the milk-supply, and many of our urban population contract disease in the country during the summer months. While prompt disinfection of the excreta is the only rational method, we should also make an effort to get rid of the flies by prompt disposal of the horse manure in which they breed, the abandonment of open privies and surface pollution, removal of garbage and other fly-breeding matter.

SANITATION OF PRISONS.

Most commendable progress has been made in the construction and management of modern prisons. The mortality at the close of the last century among prisoners in some of the French prisons, was 250 per 1,000; between 1840 and 1849 it was still 80.2 per 1,000, at St. Gallen, while to-day it is less than 30 per 1,000. Tuberculosis, typhoid fever, diarrhœa, croupous pneumonia and mental disorders are the most prevalent diseases, but much will be done in future to reduce the excessive mortality by improved lighting, heating, ventilation, good food, bathing facilities, etc.

In some of the damp, dark and gloomy prisons of Germany over 50 per cent. of all the deaths are from tuberculosis. In the Millbank Prison of London, from 1825 to 1842, there were 175 deaths, of which no less than 75 were due to tuberculosis. Besides, 90 prisoners were set free on account of being hopelessly afflicted with pulmonary tuberculosis. In the Illinois State Prison, at Joliet, during the year 1895, 39 deaths were reported from tuberculosis; in 1900 only 8 occurred. This decrease appears to be due directly to segregation of tuberculosis subjects.

HOSPITALS, SANITARIUMS AND DISPENSARIES.

Perhaps no country in the world can boast of better hospital facilities than our own. Indeed, many of our institutions are perfect in sanitary architecture and equipment. There are in the United States no less than 1,776 hospitals, including 35 special hospitals for consumptives; 308 sanitariums, 213 dispensaries, and over 8,000 mineral springs, of which 727 are health resorts. Unfortunately the liberality with which medical charities have been supplied has given rise to shameful abuses, and persons who would shrink from seeking charity in any other form have abused the privileges offered by hospitals and dispensaries.

Correction of Abuses.—In 1896, speaking of the city of Washington, no fewer than 21 per cent. of the population received free medical treatment; the medical association in 1897 adopted cer-

tain rules compelling the attending staffs of hospitals and dispensaries to require evidence of dependency; as a result of this system there has been a gradual but positive decrease in the number of charity patients, amounting to over 9,000 last year. It is the simplest, most just and effective remedy for the correction of this evil.

SCHOOL HYGIENE.

During the year ending June 30, 1900, there were 15,341,220 children enrolled in the common schools of our country. When we consider that the mental and physical vigor of a nation depend largely on the environments of childhood and youth, it seems strange that up to within 40 years little or no attention should have been paid to the hygiene of schools. The occurrence of so-called school diseases is not surprising when we reflect that children, on beginning school, enter upon a new life and environment. Up to this time they have been allowed to run and play in the open air, exercise the body and senses, without restraint, but now without a period of transition they are obliged to remain for several hours a day in close and sometimes unsanitary school rooms, taxing their minds and straining their eyes for near objects. Experience teaches, and statistics confirm the conclusion, that quite a number of children suffer from certain physical defects and diseases, which, because rarely observed before the school period, may be justly attributed to the school environments. Among the most common of these affections are myopia, lateral curvature of the spine, dyspepsia, anemia, muscular debility, headache and nosebleed, nervous affections and tuberculosis. Ware, of our own country, as early as 1812 called attention to the fact that myopia was most frequently developed in the school room, and during the past 40 years we have been enlightened as to the cause of this and other defects, and many excellent monographs have been written on the construction of school buildings, arrangement of recitation-rooms as regards light, ventilation, adjustable seats and desks, proper type for text-books, and more rational methods of mental and physical training. This, together with a commendable zeal on the part of the authorities to correct existing evils, has resulted in many reforms, the fruits of which are already apparent in a decrease of the diseases referred to.

Medical Inspection.—I cannot enter into details concerning the prevention of the spread of infectious diseases among school children, but desire to emphasize the necessity of medical inspectors, whose duty it should be to visit the schools, examine pupils, and

give such directions as will reduce the danger of spreading contagious diseases to a minimum; they should also make sanitary inspection of the buildings and present such recommendations as are necessary in the interest of the health of both the pupils and teachers, and as the physicians were perhaps the first to recognize the fact that "the system of education should be made to fit the child, not the child the system," the teachers may derive much aid from such consultations; among the cities that have inaugurated such inspections since 1894 are Boston, New York, Brooklyn, Chicago, Milwaukee, Louisville, St. Louis, Philadelphia, Jersey City, Brookline, Mass., Buffalo, Minneapolis and Salt Lake City, and they have proved of inestimable value.

SMALL-POX AND COMPULSORY VACCINATION.

In this connection, attention is invited to the undue prevalence of small-pox in the United States; the total number of cases reported to the U. S. Marine-Hospital Service during the past fall and winter, up to March 29, was 11,964, as compared with 7,279 cases for the corresponding period of the preceding year, and it is doubtless due to neglect in vaccination. Dr. Abbott estimates the vaccinated portion of the inhabitants of the United States at not far from 90 per cent., and the revaccinated portion at probably 50 per cent. With the introduction of glycerinated animal lymph every vestige of prejudice against vaccination should cease, and compulsory laws should be enacted in every State, so that small-pox here, as in the German army, may become practically unknown. While quite a number of States have enacted laws requiring that unvaccinated children shall not be admitted to the public schools, it is believed that these laws are not rigidly enforced.

VENEREAL DISEASES.

A careful perusal of Dr. Prince A. Morrow's article on the "Prophylaxis of Venereal Diseases" ("Philadelphia Medical Journal," April 6, 1901) should stimulate our efforts in the prevention of diseases which affect not only the offender, but innocent wives, the offspring and not infrequently even the medical attendant. According to Fournier, one-seventh of the population of Paris is syphilitic, and Morrow, from statistics gathered in New York, believes it is quite possible that Fournier's figures, with some modification, may apply to New York. Neisser holds that gonorrhœa is, with the exception of perhaps measles, the most widespread of all diseases. Other German authorities have computed that fully

three-quarters of the adult male population and one-sixth or more of the adult females have contracted gonorrhœa; that 80 per cent. of all deaths from disease of the uterus and its adnexes are of gonorrhœal origin, while blenorrhœa neonatorum contributes a contingent to our asylums for the blind estimated at from 10 to 20 per cent.—from 40 to 60 per cent. before the Crède method was instituted—not to mention the destructive effects on the procreative functions. Dr. S. M. Burnett, of Georgetown University, believes that 15,000 of the 50,000 blind persons in the United States lost their sight from this cause, which, according to his calculation, involves a financial loss to the commonwealth of seven and a half millions annually.

The measures which have been proposed for the control of the social evil and the prevention of its consequences are numerous enough, but not so easy of practical application. On the whole, I believe the remedy lies in public education, and the task as usual falls on the medical profession, especially the trusted family physician. Public lecturers on the purity of man commit a serious mistake, however, when they picture the consequences of the social evil without offering a suitable remedy. We should make a strong plea in favor of continence, and tell our young men that while the sexual passion is very strong it can be accelerated or delayed, excited or lowered, by the influence of the will. We should assure them that by the cultivation of pure thought, removal of temptation, normal mental and vigorous physical exercise, continence may not only become possible, but easy. And we can hardly go astray if we follow Dr. Parkes in advising a poor young man to make his home after the age of 21, and thus secure himself both from the temptations and expenses of bachelorhood.

THE MANAGEMENT AND CONTROL OF INFECTIOUS DISEASES.

It is in the field of infectious diseases where preventive medicine has and doubtless will continue to achieve its greatest triumphs, and there is ample room, when we consider that during the census year of 1890 there were not less than 102,199 deaths from tuberculosis, 74,496 from pneumonia, 74,711 from diarrhœal diseases, 41,677 from diphtheria, and 25,058 from typhoid fever. In spite of centuries of groping after facts, we knew nothing of the real nature of infectious diseases until the middle of the present century, and even 25 years ago the text-books still discussed the subject of miasma and contagions, whose nature had never been demonstrated to our senses. With improved microscopic lenses and the

development of bacteriology, more especially the discovery of the anthrax bacillus by Davaine, Pollender and Brauell (1849-1855), scientific medicine had its birth, and to-day we know that such diseases as tuberculosis, glanders, leprosy, cholera, erysipelas, wound and puerperal infections, gonorrhœa, pneumonia, cerebro-spinal meningitis, typhoid fever, diphtheria, malaria, influenza, dysentery, bubonic plague, and possibly carcinoma, are caused by living organisms, capable of reproduction within and without the body; and this is a strong argument in favor of the microbic nature of other infectious diseases, in which the specific organism has not yet been isolated.

The eradication of preventable diseases is the highest aim of scientific medicine to-day. The public should be made familiar with the nature and causes of infectious diseases, and be taught that many are a source of danger, against which it is entitled to be warned by proper notification through the health officer. This notification should be made compulsory in cholera, yellow fever, small-pox, chicken-pox, typhus and typhoid fever, diphtheria and membranous croup, scarlet fever, tuberculosis, cerebro-spinal meningitis, leprosy, glanders, bubonic plague, whooping cough and measles. And let me say that a prompt and correct diagnosis is the first and most important step in preventive measures. The health department should have competent medical inspectors and a clinical laboratory for the verification of the diagnosis, and have the power in certain of these diseases to display warning signs, enforce isolation and disinfection, and to take such other steps in the way of immunizing agents as may be deemed necessary to limit their spread.

Isolation, to be effective, should extend to all persons who have come in intimate contact with the patient, but this is rarely enforced except in small-pox, in the case of the attending physician and the wage-earners of the family, but it is clearly their duty to take special precautions in the way of clothing and personal disinfection. Matters of this kind ought never to be left to the discretion of the family, nor the attending physician, for even members of the profession often entertain widely opposing opinions on the subject of quarantine and disinfection, but the principles which ought to be carried out, apart from being a matter of conscience, should be accepted in a practical sense and embodied in effective laws.

Disinfection.—Scientific disinfection had its inception with the labors of Koch and Sternberg some 20 years ago. Although, as we

have seen, certain physical and chemical agents were used empirically for ages, now we know from laboratory experiments that they are effective, because they destroy the vitality of the germs. We also know that, in most of the contagious diseases, the infective matter is given off by the patient chiefly through the secretions and excretions, and it is evident that disinfection to be of value must be directed to these and all the media with which the patient has come in contact.

"IF CERTAIN DISEASES ARE PREVENTABLE, WHY ARE THEY NOT PREVENTED?"

My answer is, that while every scientific physician familiar with biologic research knows full well that if the methods of prevention recommended by sanitarians, including the prompt disinfection of the defecta of every typhoid fever patient, the expectoration and excretions of diphtheria and tuberculosis patients, for example, were adopted, these diseases would be reduced to a minimum and probably eradicated in the course of a few years, the facts are, these recommendations have not been generally adopted, because the knowledge gained by experimental medicine is not sufficiently diffused. Nor are we responsible for the fact that so many of our States still permit every charlatan to practise one of the most difficult and responsible of all professions without a uniform and rigid examination. However, we owe it to ourselves and humanity to take positive steps in behalf of higher medical education and laws regulating the practice of medicine. So long as we permit the existence of irregular and incompetent practitioners, so long will the public be deceived and will we be obliged to compete with incompetent men, and so long as we tolerate the exponents of so-called "Christian Science," osteopathy, and other quacks, infectious diseases will be spread as the result of ignorance and neglect.* A strong organization, such as is proposed for the American Medical Association and the various State medical societies, will speedily accomplish this and other reforms.

*During the year 1900 there were 119 regular medical schools in this country, with 1,079 female and 21,673 male students; of these 22,752 students, 2,327, or about 10 per cent., had degrees of A. B. or B. L. Number of graduates last year, 4,720. The homœopathic schools had 1,584 male and 325 female students, and the eclectics, 500 male and 52 female students. The number of registered physicians in the United States in 1900 shows an average for the whole of about 1 to 636 inhabitants. In 31 States and Territories, according to to D. McIntyre, an examination is required, in 9 certain diplomas are accepted, all others must be examined; in 5 only a diploma is required, and in 5 the laws practically impose no restriction. In 1900 there were 150 National and State medical societies, 1,097 county and local medical societies, and 282 medical journals, of which 28 were exclusively devoted to hygiene and public health.

FORECAST OF THE RESULT OF THE CENTURY'S WORK UPON THE MORTALITY STATISTICS.

Notwithstanding these and other disadvantages in the way of defective sanitary legislation, the American medical profession has reason to be proud of its work in the century's progress of hygiene and preventive medicine. It may be truly said that every hospital or other medical charity owes its foundation and success to the activities of the medical profession. Nay, every law inscribed on the statute books in the interest of public health in this and other countries is the work of our noble profession. Acting upon the lofty principle that the education and betterment of the people in sanitation is not less humane than the healing of the sick, the American medical profession has filled the measures of its philanthropy by advocating laws to "regulate the health and physical wellbeing of communities," and thereby lessen its own income, but the results attained during the last 10 years are sufficient recompense. By the courtesy of Mr. William A. King, Chief Statistician of the U. S. Census Bureau, I am enabled to give you a forecast of the result of the work upon the mortality statistics at the close of the century.

The mortality returns of the twelfth census, which relate to the year beginning June 1, 1899, and ending May 31, 1900, have not yet been tabulated in full, but sufficient progress has been made to permit a comparison of the preliminary results with the figures for 1890 for a portion of the country.

Considering these results for those States in which the returns were secured from registration records in both 1890 and 1900, there appears to have been an absolute decrease in the general death-rate of about 1.5 per 1,000 of population. This decrease seems to be most marked in the rates due to scarlet fever, whooping-cough, diphtheria and croup (combined), typhoid fever, malarial fever, tuberculosis, diarrhœal diseases, and diseases of the nervous system, the decrease in the mortality from diphtheria and croup amounting to more than 50 per cent. On the other hand, the rates due to carcinoma and tumor (combined), Bright's disease, heart disease and dropsy (combined), and pneumonia are apparently greater than in 1890, the increase being most marked in the case of Bright's disease, carcinoma and tumor, and pneumonia.

The death-rate by age periods in the registration States has not yet been computed, as the population figures are not yet available, but the effect of the decrease in the rates due to the causes specified

is shown by a decrease in the proportion of deaths occurring at each period up to 30 years.

The result in the decreased rates of diphtheria, croup, scarlet fever, typhoid fever, whooping-cough, tuberculosis, malarial fever and diarrheal diseases are the direct outcome of preventive medicine and as gratifying as they are striking. We note, we regret, the increased rate in Bright's disease, heart disease, dropsy and pneumonia, and may well pause to inquire whether our ever-increasing "National Drink Bill," averaging 17.68 gallons per capita, may not be a factor in the development of these diseases, epecially since there is reason to believe that the habitual and immoderate use of alcohol, apart from increasing the connective tissue and causing cirrhosis, also produces fatty degeneration, especially of the heart, liver and arterial coats, probably because it promotes the conversion of albuminoids into fat.

Without wishing to underrate the brilliant achievements in surgery of the brain, stomach, intestines, liver, gall bladder and other abdominal organs, and even wounds of the human heart which have been successfully sutured in 4 of the 9 cases reported, what, after all, are the ultimate benefits compared with the results obtained by improved methods of sanitation?

Since our knowledge of the nature of infectious diseases has been more and more defined, scientific methods for their prevention have been applied. We have learned, too, that in addition to the germ there must be a suitable soil for its proliferation and that sanitation will not only destroy the environments for its development without the body, but also place the system in the best possible condition to resist its toxic action.

The application of this knowledge has saved millions of lives, besides an incalculable amount of human suffering and distress, not to mention the economic aspect of the question. When we remember all this and the fact that Jenner's discovery at the close of the last century of a fundamental and practical method of producing artificial immunity has been far eclipsed in the last 20 years, and that we posses to-day not only curative but also protective serums for diphtheria, erysipelas. tetanus, plague and possibly cholera, tuberculosis, typhoid fever, pneumonia, and a number of other immunizing agents for diseases of man and lower animals, we have reason to believe that the solution of the problem of immunity is only a question of time, and we may indeed expect great possibilities in our battle against infectious diseases.

To the solution of this problem, the labors of Salmon and Smith,

Sternberg, Welch, Osler, Councilman, Reed and other Americans engaged in experimental medicine, have contributed their full share. Progress has crowned our past; we will not retrograde. Let our conduct raise no blush on the cheek of posterity. Let us hand in hand with heart and mind join in promoting the welfare of American medicine until she has reached the proudest pinnacle in the world of science, until she has become the fountain-head of knowledge for the benefit of mankind. Then when at last we are called upon to pass through the portals beyond, Minerva Medica, in her sweeping robes of state, will proudly but reverently present us to the Supreme Healer of the Universe as type of the true physician.

SANITATION AND YELLOW FEVER IN HAVANA.*

Report of Major V. HAVARD,
Surgeon U. S. A., Chief Surgeon.

YELLOW FEVER, ESPECIALLY FROM THE VIEWPOINT OF THE SANITARIAN.

Yellow fever has played such a conspicuous and important part in the mortality of Havana that it deserves special consideration. This infectious disease may claim Havana as one of its oldest and most favored haunts. It was here as early as 1720, if, as I believe, we are justified in so regarding the outbreak of that date described by the historian Pezuela, apparently imported from Vera Cruz. It thereafter broke out in occasional epidemics like the historic ones of 1749 and 1762, the latter being particularly fatal to the Anglo-American army, which had just captured the city, and causing the conquerors to relinquish their prize in 1763. From that day to this, yellow fever has been endemic in Havana, hardly noticeable in some years, a mere smouldering fire when non-immunes were few, but quickly lighting up into a blaze as soon as the fuel of immigration came within its reach. The result has been a thoroughly infected city, a source of danger not only to its own inhabitants and the rest of Cuba, but as well to all countries having commercial relations with it.

During the decade 1890-1899, the recorded number of deaths was 4,831, giving an annual average of 483, with a wide range

*Continued from page 21.

from 1,282 in 1896 to 103 in 1899. In 1900 the number of deaths was 310. Thus yellow fever is not nearly as fatal in Havana as typhoid fever in the United States, and its importance would seem to have been very much exaggerated, did we not realize that its mortality is not furnished by the whole population, but only a small proportion thereof—that is, the non-immunes—probably never averaging more than one in ten.

Until a few months ago, the mode of propagation of yellow fever was uncertain; we were fighting an unknown enemy in the dark, an enemy so wily and elusive that we never knew to what extent our clumsy and expensive methods of warfare were successful. But, very recently, much light has been thrown upon the subject as the result of one of the most brilliant medical discoveries of the age. The announcement long ago made by Dr. Carlos Finlay, of Havana, that mosquitoes were the agent of transmission in yellow fever has been verified and scientifically demonstrated by Major Walter Reed, surgeon, U. S. A., and his colleagues, in the most conclusive manner. It is true that the germ itself, in spite of the claims of Sanarelli and his partisans, has not yet been isolated, but this is of comparatively little moment to the sanitarian, more concerned with prevention than cure. For our purpose the mosquito is the enemy, and all our efforts must be directed against it. This war should be waged with a twofold object: the destruction of the malaria-bearing *anopheles* and that of the yellow-fever-bearing *culex*, thus, at the same time, eradicating the two diseases which have contributed so much to make Havana a by-word of reproach among civilized nations. Practically, then, the problem consists: First, in finding the haunts and breeding places of mosquitoes and the best means of extinguishing them; second, in carefully protecting yellow fever patients and all non-immunes with mosquito-bars, so that mosquitoes may not be infected by the former and carry the infection to the latter; third, in isolating patients, and, also, as much as is possible, non-immunes, so that mosquitoes biting the former may not be able to reach the latter. The knowledge that mosquitoes do not travel far, seldom more than a few hundred feet if shelter exists, and that each house practically breeds its own, simplifies the question. The data being thus plainly stated, there do not appear to be insurmountable obstacles in the way and we may confidently expect to see yellow fever stamped out in Havana in the course of three or four years after the construction of a good sewerage system, provided the

same unremitting efforts are continued under intelligent medical supervision and with the unrestricted help of the State.

The isolation and protection of patients is a most important measure, but hard of successful accomplishment, on account of the difficulty of discovering and recognizing all cases. Many patients among the poorer classes are not seen by physicians, and the experience of the last two or three years has led us to believe that many cases, specially among young children, are so mild that they pass unrecognized or are wrongly diagnosed. From these mild, ambulatory, and consequently unprotected cases, the fever is mostly spread. It is only when the profession becomes convinced that such cases really exist, and that, as foci of infection, they are as dangerous as severe cases, that perfect results will be obtained.

Our present knowledge concerning the agency of the mosquito in yellow fever explains much that was obscure before and furnishes useful indications to the sanitary physician. For instance, the part played by dirt and filth in the breeding and propagation of the fever was always problematical; now we know that they have nothing to do with it except inasmuch as they may attract and feed mosquitoes. It is certain that in Havana, in 1900, no visible correlation could be seen between dirt and yellow fever; the district which became first strongly infected lies east and south of the Parque Central, and is one of the cleanest and best constructed, while the most unsanitary wards became infected late in the season and only to a slight extent; the malodorous district reserved to houses of ill-fame hardly had a case. Yellow fever has not followed the poor and unclean, nor the march of previous infections, but rather the movement of non-immunes; wherever these located, there the infection searched and found them, regardless of the hygienic conditions of their premises, the most aristocratic apartments on the second and third floors being as liable to its invasion as any of the hovels crowded around a patio.

We also know that digging the ground, either for purposes of cultivation or construction, or, for instance, the laying of sewers, is a perfectly harmless operation so far as yellow fever and malaria are concerned, provided no water is allowed to stagnate in any of the cuts and ditches. The value of this knowledge on the eve of undertaking our great work of sewerage cannot be overestimated.

The positive agency of the mosquito in propagating yellow

fever would naturally argue the non-contagiousness of the disease and the inertness of fomites; but in order that the demonstration might be complete, Major Reed and colleagues also conclusively proved by direct experiment that infected linen, bedding and effects of all kinds are powerless to convey the disease. This discovery must bring about a revolution in our methods of disinfection and quarantine in yellow fever. Disinfection becomes completely useless since there are no infectious germs to destroy. In a house where a case of yellow fever has been under treatment, the problem is how to reach the mosquitoes which have become infected by biting the patient and are still lurking in the vicinity. It is probable that a certain proportion of mosquitoes, after feeding, fly out in search of water wherein to lay their eggs, in the immediate neighborhood, but enough remain in the patient's and contiguous rooms to require action. The best way to destroy them, so far as now known, is by fumigation. Sulphur fumes are most efficacious, but otherwise so objectionable that preference should be given to formaldehyde, which, as we know, is much safer and more convenient. It kills mosquitoes in from ten to fifteen minutes, so that rooms treated with it need not be closed more than three or four hours. The good effects of such fumigation seem to have been proved in preventing the occurrence of a second case in 694 out of 885 infected houses in Havana, and by the absence of a single case in Santiago de Cuba in 1900, after the epidemic of 1899.

The duties of quarantine officers have also become singularly simplified; since we may assume in practice that the infectious germs do not exist outside of a man or mosquito, the disinfection of trunks and baggage on account of yellow fever is no longer justifiable; all that is required will be the examination of non-immunes within the five days immediately following their last exposure to infection, the danger of transmission being from their own persons and in no wise from their clothing or baggage. Ships, like houses, are liable to harbor infected mosquitoes and will continue to require fumigation.

From what precedes it must be evident that the two chief factors in the propagation of yellow fever are mosquitoes and non-immunes. Non-immunes are almost entirely furnished by immigration; were it possible to completely stop it, especially from Spain and the Canary Islands, for two or three years, it is almost certain that during that short period, all germ-bearing mosquitoes

could be destroyed and the city thereafter kept as free from infection as Kingston, in Jamaica, and San Juan, in Porto Rico. Immigration, however, is too valuable to the interests of the island to be stopped, or even checked, for the sake of stamping out yellow fever, a disease without terror and of little consequence to Cubans. It is only possible, then, to take such measures as will protect as many non-immunes as possible without interfering in any way with business interests. The plan lately adopted is practical and efficient: All non-immune immigrants who do not come in answer to a call from Havana are taken to a detention station on the healthiest site around the bay, where they await in comfort and safety offers of employment. All employers of labor, or as many as it is possible to reach, have been notified of the existence of this station and invited to engage there all the hands they need. Earnest efforts are made to send as many as possible of these immigrants to the rural districts where most wanted. In this way all are benefited; the immigrant who procures work without hardship or danger, the city of Havana, which is rid of dangerous non-immune agglomerations, and employers, who are enabled to get as many hands as they may require with the least trouble and expense.

The relation which Spanish immigration has borne to yellow fever is important and interesting. It has been most active in periods of peace and prosperity, becoming small or stopping altogether in years of political disturbance and insurrection, and statistics show that the spread of yellow fever among civilians is directly proportional to the number of immigrants.

Soldiers, on the contrary, were few in years of peace and contributed little to the yellow fever mortality; but in troublous times they were greatly and rapidly increased, beginning to arrive as the civil immigration began to stop, so that their mortality curve rose as that of the civil population fell. Thus, when the last insurrection broke out, in 1895, immigration stopped; on the contrary, troops poured into Havana, and the result was a very high military mortality in 1896, 1897 and 1898. When the American troops took possession of Havana on January 1, 1899, the whole population was practically immune and, the Spanish troops having departed, cases of yellow fever ceased. The American troops formed the only susceptible or non-immune element, and disciplinary measures were successful, with one slight exception, in preventing their contagion. It therefore happened, naturally enough, that only a few scattered cases were observed during the

spring and summer of 1899. As soon as peace was assured the current of immigration was resumed, and in greater volume than ever; the result was immediately seen in the number of cases, which steadily increased from August to December, the number for December being larger than for the same month in any previous year; this is more striking because the death-rate of yellow fever generally rises to its maximum in August and September and shows a marked decline from October to December.

During the years 1899 and 1900, 40,384 immigrants arrived at Havana; namely, 16,260 in 1899, and 24,124 in 1900, a great majority of them non-immunes, and at least 50 per cent. remaining in the city of Havana. They still continue to come at about the same rate. With these figures of the largest immigration on record in the same space of time, what happened was to be expected and unavoidable; namely, an unusually large number of cases of yellow fever in the summer and fall of 1900 and a correspondingly high mortality, although the deaths (310) did not reach the annual average of the past decade. The effect of cold weather on the infection was, as usual, well marked; from seventy-four in October the number of deaths decreased to fifty-seven in November, twenty in December, and only seven in January, 1901.

The subject of immunity against yellow fever is very interesting and deserves a few remarks. Immunity is not enjoyed by all Cubans, as popularly believed, but only by those residing in cities, not by those who have lived from infancy in the interior rural districts. In other words, immunity is only enjoyed by the residents of centres where yellow fever is endemic; it is not enough to have lived in a tropical climate, one must have lived in an infected locality. The inference, therefore, is strong that immunity is acquired only by an attack of the disease; there is no other infectious disease against which immunity is obtained in any other way, and there is no reason to believe that yellow fever is an exception to the rule. Under the former belief that it was acquired by the absroption of germs through the respiratory passages, it was possible to conceive the possibility of a very slow but constant infinitesimal absorption, which might in time produce immunity without any apparent fever, but such a conception is no longer tenable if the germs are introduced directly into the blood by the mosquito. Those physicians who assume *a priori* that Cubans, whether they live in the city or country, cannot have yellow fever, decline to recognize it when they find it in natives;

they call it *fiebre de borras,* and consider it a special form of malaria which, strangely enough, only occurs in this island.

Since the great majority of Cubans are immune and immunity is only acquired by an attack of the disease, we are compelled to the conclusion that nearly all natives of Cuba must have yellow fever in their youth, probably in the first few years of their lives. At that age the disease appears to be mild and comparatively harmless, and we may fairly assume that the 5,000 children annually born in Havana have it in such form that it is generally unrecognized by physicians, who diagnose it under the comprehensive headings of malaria, calentura, or meningitis. In this connection it is interesting to observe that in epidemic years the proportion of deaths among children not diagnosed yellow fever is noticeably greater.

Here an interesting question suggests itself: If Cubans have yellow fever in infancy in such a mild form as not to endanger life, and remain immune thereafter, why should they endeavor to eradicate the disease in the island, so that their descendants will lose immunity and become liable to any epidemic that may break out hereafter? The answer is that foreign visitors and immigrants have natural rights that Cubans are bound to respect; that epidemics can be guarded against and avoided; and, lastly, that, although Cuban infants have the disease in an apparently mild form, it will probably be found, when the matter is investigated and the obscure diagnoses of many of the reported cases of death carefully analyzed, that a larger proportion of deaths among children than is generally believed is due to yellow fever, or complications therefrom.

A few words in closing upon the result of treatment of yellow fever cases at Las Animas Hospital, an establishment intended for the reception and treatment of all contagious diseases, but chiefly yellow fever. During the year 1900 it was under the direction of Major W. C. Gorgas, chief sanitary officer, who devoted to it much of his valuable time. The hospital is pleasantly situated in the outskirts of the city and as completely equipped with material and personnel as any hospital of its kind in the United States, American trained nurses being in attendance. An ambulance carrying physician and nurse, is always in readiness to go when summoned, and the greatest care is taken to save patients all unnecessary fatigue or exertion in transit.

The patients sent to this hospital may be divided into two classes: First, Americans (including a few other foreigners), the majority

of them brought there at their own request early in the disease, but including also not a few homeless vagabonds and drunkards; second, Spaniards, mostly of the lowest classes, too poor and thriftless to belong to any of the quintas de salud.

It can easily be seen, therefore, that Las Animas receives most of the worst cases, generally after the disease has lasted several days, not infrequently the patients being unconscious, and occasionally moribund, as shown by the fact that out of fifty-eight deaths, eighteen occurred within three days after admission. During the year, 272 cases of yellow fever were admitted; 167 Americans, 74 Spaniards, and 31 of other nationalities; 214 recovered and 58 died, giving a general death-rate of 21.33. Taking the three leading and best-conducted private hospitals in Havana for comparison: namely, the Dependientes, Covadonga and Benéficia, we find that during the year their yellow fever death-rates were 24.35, 27.51, and 24.35 respectively, each higher than that of Las Animas, although their patients, being members of the Centros or Clubs to which the hospitals belong, are generally admitted early in the course of the disease and therefore in much more favorable conditions for successful treatment.

At Las Animas the death-rate of Spaniards was 36.48 and that of Americans 12.57, a most remarkable difference when we bear in mind that all patients there receive the same identical treatment, in the same wards. This difference is partly due to the fact that Americans are in better physical condition, with greater power of resistance, but chiefly to the circumstance that they are admitted early and have the full benefit of the treatment. In this respect, the status of Americans at Las Animas may be fairly compared to that of the Spaniards received at the above-mentioned hospitals, and yet their mortality is only one-half that of the latter. Such results furnish food for reflection. At Las Animas, patients are treated almost entirely on the expectant plan; medicines are avoided until there is a clear indication for their use; absolute rest, very careful dieting, and the constant attention, day and night, of trained nurses have been the main features of treatment. The key to success in the treatment of yellow fever, I believe, is good nursing at the hands of specially trained women. Such nursing is expensive, and in Cuba has been practicable, so far, only in a few other hospitals, but any method of treatment which saves lives is always found to be the cheapest.

V. HAVARD,
Major and Surgeon, U. S. A., Chief Surgeon.

TYPHOID BACILLUS IN THE SOIL.

DR. SIDNEY MARTIN, summarizing his previous investigation and reports, "Medical Health Officer's Report" (Report of Local Government Board, London, 1901), remarks that the typhoid bacillus under certain conditions will grow in particular kinds of sterilized soil. In such soil as is obtained from cultivated areas, gardens, and the surroundings of houses, after sterilization, the bacillus, if inoculated in small quantity, will live and multiply, gradually pervading the whole extent of the soil. The conditions favorable to this result are the presence of a certain amount of water, and also of the organic matter which is present in such cultivated soils. On the other hand, it was found that in what may be called "virgin" soils—soils mostly sandy and peaty, which had never been under cultivation or manured—the bacillus would not grow, and rapidly died out, even in the course of two or three days. There is, therefore, a marked difference between these two classes of soils when used in a sterilized condition—in other words, in the absence of other bacteria—as culture media for the typhoid bacillus. The vitality of the bacillus in the favorable sterile soils was remarkable. It was found alive more than a year after the experiments were begun, and after this interval the soil could be dried at a low temperature, so that it could be powdered, with the result that the bacillus still, for a short time, retained its vitality.

The experiments of the bacillus in sterilized soil, however, were only preliminary to a more important investigation which had for its object the determination of the conditions, if any, under which the typhoid bacillus might live in soils of one kind and another under natural conditions, and necessarily unsterilized. Soils, more particularly those which have been cultivated and manured, contain numerous bacteria, aerobic and anærobic, and their presence in soil puts quite a different complexion on the research when the typhoid bacillus is added to the soil with the view of studying its behavior.

Antagonism between these bacteria and the typhoid bacillus has now to be reckoned with, and the presence of the former adds enormously to the difficulty of the research. In several experiments described in previous reports attempts were made to recover the typhoid bacillus after it had been added to unsterilized soils which in the sterilized condition were found favorable to the

growth of the bacillus. In not a single instance, however, was the typhoid bacillus regained, although laborious and prolonged experiments were made with this object. The conclusion, therefore, was that under the conditions of the experiment the presence of the bacteria of the soil had either prevented the detection of the typhoid bacillus or had inhibited its growth, and so led to its ultimate death and disappearance. If sterilized soil be dried at a low temperature to a powder the typhoid bacillus will retain its vitality for a while, but soon afterward dies, and can never be revived. From this fact it is concluded that this bacillus, placed among other bacteria under certain conditions of moisture and temperature, may in unsterilized soil be beaten out of the field by the other bacteria present.

Dr. Martin records several experiments on these lines. After briefly summarizing the procedure, he points out that the experiments were performed under simple conditions in which individual bacteria from the soil were, so to speak, pitted against the typhoid bacillus. It was found that more than one bacterium from a particular soil had this property of exterminating the typhoid bacillus. In some instances, on the other hand, it was found that the typhoid bacillus was more active in its growth at one or other temperature than the soil organism. He remarks that the problem of the growth of the typhoid bacillus under actual conditions in the soil is therefore a complicated one, and appears to depend mainly on the kind of bacteria present in the particular soil, as well as on certain special conditions of temperature and moisture.

The experiments included, in the first place, experiments on the inter-action of the soil organisms and the typhoid bacillus under simple conditions; in the second place, to determine the ability of the typhoid bacillus to live in certain "natural" unsterilized soils, in each of which, when sterilized, it had been proved by experiment that the typhoid bacillus is capable of living for a great number of days. In previous experiments Dr. Martin had found the typhoid bacillus to disappear from unsterilized soil in twenty-four hours, even though the same soil when sterilized had proved capable of supporting the life of the bacillus for weeks, and even months. Using different soils, and also varying the experiments by keeping the soils dryer and at lower temperatures, the moisture in previous cases having apparently been inimical to the bacillus, Dr. Martin again found that the ability to maintain itself was much less than in the case of sterilized soils. But instead of twenty-four hours, as in the first series of experiments with unsterilized soils, the

period of vitality was found to be about twelve days, though in no case was there evidence of any sustained multiplication of the typhoid bacillus. The varying results obtained, however, enable Dr. Martin to draw certain general conclusions. The most important of these deductions have been indicated in the course of our summary of his report. In conclusion, we need only endorse Dr. Power's comment, that a distinct advance has been made in our knowledge of the subject, inasmuch as a beginning has been made in understanding the conditions under which natural soil is capable of harboring the typhoid bacillus. Through the propagation of typhoid fever is doubtless most frequently due to the direct pollution of the water and milk supply, or to defects in the sewerage system, it is not always traceable to these sources, and when it is not so, the experiments and researches of Dr. Martin indicate the probability of the source of the prevalence of the germs in the subsoil, which pollution, again, of course, may be due to defective or, it may be, non-existent drainage and sewerage. Some knowledge of the conditions favorable to the development of the typhoid bacillus in soil is therefore the more desirable.

THE CURING OF TUBERCULOSIS IN SANITARIA.*

By Prof. Schrotter, of Vienna, Austria.

The question of treatment of Tuberculosis in sanitaria, to which I have devoted myself since 1883, has become at this moment one of the most actual in the whole world. It requires particular attention on two points.

1. Stating cases of real success, which we call curing.

2. Making a special study and an accurate analysis of every case in which the treatment in the sanitarium failed.

a. In the medical reports of our sanitarium at Alland, near Vienna, we are very careful in pronouncing the word "cured," and do not rubricate the cases dismissed from the sanitarium as healed or ameliorated, but speak only of essentially ameliorated, etc., keeping all cases in continual evidence so that we may be able to say after some years what the real state of the patient is. The

*Read at the American Congress of Tuberculosis May 15-16, 1901. From advance sheets of "Bulletin."

patients are compelled to show themselves regularly, either in the sanitarium at Alland, or in our Central Bureau in Vienna, where the same medical men who made the first examination on which depended the admission of the patient (or not), continues to observe the patient, not from his memory alone, but with the assistance of the exact dates in the protocolls. So we hope to be able to give in some years reliable statistics of real cures. At this moment we have every reason to be contented with good results. They are better even than we expected them to be, and we hope not to be obliged in the future to alter this good opinion.

b. What can be the causes, supposing that we had accepted quite a favorable case for the sanitarium, that instead of the expected amelioration, exactly the contrary, finis lethalis, takes place? In the first volume of "Zeitschrift fur Tuberculose und Heilstattenwesen," Leipzig, 1900, was described from the above point of view, a case of very severe tuberculosis, in which it advanced, to our great astonishment, not only to a progradient amelioration in the general state of health, but to a complete cicatrization of the extended ulcerations of the larnyx, so far that it came even to a stenosis; and also of proceedings of induration in the lungs; but unfortunately destroyed all good effects, and tuberculosis in the intestinal tract took place to which the patient finally succumbed.

Now I will show another case which at first promised to turn out well, and then, unfortunately, turned out badly. Why? I shall try to be as brief as possible.

The patient, a delicate girl of twenty-six years of age, whose disease began in January, 1898, with coughing sometimes blood-tinged sputa, in Galy pleurisy, was admitted into Alland in September of the same year. We found a slight infiltration of the right apex as far as the second rib and the rest of a pleuritic inflation lower down. After a considerable amelioration, which was only interrupted by intercurrent pleuritis, she showed on the 26th of November, 1898, every symptom of a pneumothoray, which was on account of the pleuritic effusion, pneumopyothoray. Yet we were lucky enough to be able to state that after the pleuritic condition had spread entirely over the right side, on the 26th of February, 1899, every sign of pneumothoray, together with the effusion, had disappeared, and the weight of the patient had increased 3.3k. She was so well that the medical men were on the point of dismissing her from the sanitarium, and took the trouble of looking for a place for her where only light work was required. The patient followed from the middle of October, 1899, to March,

1900, a treatment with acid cinnamylicum and increased in weight. Under continuing good health the second incident arrived. On the 21st of June, 1900, the symptoms of pneumothoray could be again stated. On the 9th of December, 1900, she suddenly coughed up 350 An. 3 purulent sputum. Now, there are two things possible, either the second pneumothoray was caused by perforation of the lung with very slow increasings of the pleuritic effusion till it reached finally, on the 9th of December, the opening of the lung, with the result of the abundant expectoration; or the opening in the lungs was again shut up, the effusion increased slowly to a certain degree and then a new, larger, but now permanent, perforation took place. In this state the patient came into my clinic. She was constantly feverish, complained of pains in the right side and of an abominable taste in her mouth, caused by the above-mentioned purulent expectoration. As different gargles and inhalations brought no relief, we performed on the 20th of January, 1901, the thoracotomy with a large incision at the back of the eighth intercostal space, following which, about half a liter of fœtid purulent fluid flowed away. We continued washing the pleural cavity with kali hypermangan. The abominable expectoration ceased. This was all we could do for the real relief of the poor patient, for it was soon clear that the continuation of fever was not caused by the disease in the right side, but by the increasing of tuberculosis in the left lung. She died on the 1st of February, 1901, and the post mortem showed a plum-sized cavity with an opening about the size of a lentil, in the compressed right lung, with subacute tuberculosis in the left.

We see in this case the event of pneumothoray took place twice, perhaps three times; we see an energetic struggle even against so serious an occurrence, with good effect, and only at the entrance of open pneumothoray was the fate of the poor patient sealed. We could do nothing but bring her relief, and the subacute tuberculosis of the left lung accelerated the fatal end.

What we learn by this case is that the treatment of sanitaria will not be able in every case to prevent the advancement of tuberculosis, and with that the entrance of severe complications; but this treatment can give the body such a resistance as certainly the patient did not possess before, and may be able to a certain degree to overcome such serious incidents.

I must mention the possibility that injections of acid cimen had some good effect.

THE UTILITARIAN PRINCIPLES OF TAXATION AND THEIR RELATION TO ALTRUISM.*

By R. S. GUERNSEY, of the New York Bar.

THE BURDENS OF TAXATION AND SERVITUDES ON LAND AND REAL ESTATE IN RURAL DISTRICTS.

A comparison of the taxation and servitudes on land in rural districts, outside of the limits of cities and incorporated villages in New York State, will further illustrate the burdens and laws of taxation and assessments in cities. In the country, roads are laid out and constructed at the expense of the town in which they lie, and are paid for by general taxation on the taxable real and personal property in the town. None of it is specially assessed on the abutting or adjoining owners. Highways are kept in repair by assessment in the district by the number of days' labor, which the law requires shall annually be not less than three times the number of taxable inhabitants in the town. There is a poll tax of one day's labor upon every able-bodied male inhabitant of the district over twenty-one years of age and under seventy. The other days' labor is divided ratably upon the taxable property and residents in the highway district. A commutation of one dollar per day may be paid in lieu of labor.

The apportionment of labor on the real and personal property in the district is one day for about every four hundred dollars of taxable property on the town assessment roll. The minimum is three hundred dollars, and the maximum is five hundred dollars valuation for a day—being according to the amount of work deemed necessary to be done.

Where a person lives on a private road, and works the same, he may be credited so much on account of his assessment as the highway commissioners deem necessary to work such road, or the road may be annexed to some highway district.

The clearing off of snow from the highway to make it passable is done by those who are subject to highway taxes, and they are allowed therefor.

The owner or lessee of lands abutting upon a highway must cut and destroy all weeds, briars and bushes growing upon such lands within the bounds of the highway, between the 15th of June and 1st of July, and between August 15 and September 1 of each

*Continued from page 28, preceding number.

year. In default thereof, on notice by the overseer of such highway, the work may be done by the overseer and the expense therefor made a charge upon the abutting lands, and the same collected with other taxes on the land.

Bridges are built and kept in repair at the expense of the towns in which they are located. When a bridge is across a stream that is the boundary of two counties, each county must pay one-half the expense of its construction and maintenance.

The general effect of this law was such, and the demand for better roads became so urgent, that, in 1895, a law was passed authorizing the Board of Supervisors of any county to designate as county roads such portions of the public highway in such county, outside the limits of any city, as they deemed advisable, the expense of improving, repairing and maintaining the same to be a county charge, to be apportioned upon the towns and cities within the county and to be levied and collected at the same time and in the same manner as other taxes for county purposes. The issuing of county bonds for such purposes was also authorized, to draw interest annually, and not to run longer than twenty years. These roads are exempt from the jurisdiction of the town and village officers and from their system of working and repairing highways; the Board of Supervisors to designate the amount of money to be expended upon each county road, under the direction of a County Engineer.

The demand for better roads becoming more urgent, a law was passed in 1898, providing for State roads and their improvements, one-half the expense to be borne by the State, one-fourth by the county in which they may lie, and one-fourth by the town; all to be paid by general taxation. The Board of County Supervisors can, in their discretion, direct that thirty-five per cent. of the cost be borne by the county and not more than fifteen per cent. assessed on the abutting property owners benefited thereby.

There is no assessment or expense in towns for sidewalks, or pavements, or sewers, or street lights, or water supply. Each property owner may provide that for himself, as far as his property extends, if he choose to do so; otherwise it does not exist for the benefit of the public. The boards of town officers are authorized to contract for such matters, which must be initiated by a specified number of taxpayers. The absence of these improvements in towns shows how the taxpayers and voters look upon such matters when much expense is to be incurred therefor. Cities and villages are taxed to help pay the county expenses in

which they are located; hence, they will help pay for the county roads that lead to them.

The owners of property adjoining a public road may, at their own expense, locate and plant trees and construct sidewalks along the side of the highway adjoining their property, on authorization and approval of the town commissioners of highways. For every four trees thus planted the owners shall be allowed a rebate of highway taxes the next year of one dollar, but it shall not exceed one-quarter of their annual highway tax for any one year, but may be continued until all the rate is completed.

Sidewalks may be constructed in any highway district on request of a majority of the inhabitants of the district, subject to highway labor, but not more than one-fourth of the highway labor shall be expended in any one year for the same, and it shall not be anticipated for more than three years; the work to be done under the direction of the overseer of the highways for the district.

The owner or holder of property subject to highway taxes in towns outside of incorporated villages may erect a street lamp and cause the same to be properly attended to and kept burning during such hours of each night as the overseer of highways may direct, and in such location as the overseer may direct, and he shall be allowed six dollars annually in abatement of his highway tax.

A watering trough beside the highway, kept supplied with water for the use and comfort of horses with vehicles, may be constructed on the land adjoining a highway; the owner may be allowed a rebate of three dollars a year from his highway tax. The number and location of such watering troughs must be designated by the town commissioners of highways. It is a town charge.

There are town and village Boards of Health with few powers and regulations, but they are only put into operation when affected persons come to complain about them. The State Board of Health will not intervene or act in local matters where the town or village or city officers have jurisdiction.

There is no restriction about buildings or structures of any kind. No fences are required along highways. Fire insurance is seldom thought necessary, or is at a cheap rate for a small amount.

The same laws apply in rural districts as to the kinds of property that are subject to general taxation as are in operation in cities. The property subject to taxation is assessed according to its value.

State and county taxes are annual only. Town, school and highway taxes recur twice or more often each year. Special assessments for building bridges in towns, and for building district schoolhouses, are made and included in the town or district taxes.

The district schoolhouse must be paid for by the taxable inhabitants of the school district, but they have only to make up the deficiency of the expense of maintaining a school for several months in the year. A large part of the cost of maintaining this is paid for by the State in proportion to the number in attendance. The State generally contributes much more than half of this expense annually and derives it principally from cities and from a direct tax for school purposes. The town and county expenses are comparatively small and the assessment of valuations is low and it makes the State tax small. There are single buildings in New York City that are each assessed in value for more than all the real estate and property in some of the counties in the State. This is not because the real estate in those counties is valued proportionately less than it is in New York City and other cities. It is because there are practically no local improvements on or about it, and the buildings and structures upon the land are of little value, and the productions from it are consumed by those that work it.

There is no other demand for the products. They are used more as necessities than for profit. In cities the large buildings are to supply the demand for such structures as will yield a large profit on the investment as well as a quick, sure and ready return. In agricultural products the return is uncertain and slow, and the demand is fluctuating when the yield is good.

The construction of buildings in rural districts is left entirely to the option of the owner, as to form, cost and locality, and to the purposes for which they may be used. This applies to each and every structure on the land. Villages that are not incorporated are governed by the same laws as agricultural lands.

In estimating the value of agricultural lands, the proximity of them to an accessible market for their productions at the least cost of transportation should be the prevailing value, to which should be added the cost of the improvements and structures thereon. When the latter are designed for increased products, they should be valued according to the profits in connection with the use of the land. As an illustration: Agricultural lands devoted to pasturage situated within a few hours' transportation to a city should be valued according to the profits that could be derived therefrom by judicious management. The value of the ap-

propriate structures, including fences, should be added to the land. Where the land is not capable of producing anything, or is a marsh or mountain land, the valuation is only nominal. In such cases the surrounding improvements are not regarded as increasing its value. In cities, vacant lots are valued according to their fitness for dwellings or other purposes not connected with common agricultural productions.

Highways in towns outside of incorporated villages are regarded as still belonging to the adjoining owners on each side to the middle of the road, and cannot be used for any other purpose without further compensation to the adjoining owners, without their consent or acquiescence. This is so, notwithstanding the town has paid the owners for the land taken for the highways. This is in contrast with the situation of the owner of land bordering on a street in cities and in villages, where the land is taken for making a street, and the abutting owner is assessed to pay for the value of his land thus taken and for all the improvements and work done upon and about it. And yet he has nothing to say about the expense or the uses to which it may be put, and is regarded as no longer the owner of any interest in it. His private property has been taken for public use; he has been paid for it by being assessed a much larger sum than he gets for his property so taken, and must continue to pay taxes annually on the sum so invested, besides losing the interest on such investment. His only relief is to find some tenant whom he can get enough rent from to share a part or assume the whole loss of such an investment.

In agricultural and rural districts there is more uniformity of conditions appropriate for uniform taxation, while cities have each an individuality peculiar to themselves and their inhabitants, and such diversity is recognized by charter provisions and special legislation, as are deemed desirable in each locality. The buildings and local improvements show the most striking diversity in conditions that prevail.

The causes of these conditions can be traced to the financial policy that is controlled by the taxes upon real estate. Where other sources of revenue are obtained for municipal purposes, there can be observed much better conditions and more public spirit for the general welfare and enjoyment of the inhabitants.

The entire taxes are practically upon real estate in rural districts. Not more than five per cent. of taxes is upon personal property in towns outside of cities and villages. The assessment

rolls are made up to July 1 in each year, after farm products are consumed and disposed of; the other (personal) property is directly or indirectly exempt from taxation. Agricultural products should not be taxed, neither should raw material for manufactured products. We should look to business centers for revenue by taxation.

The occupations are numerous and profitable in cities, while in rural districts they are few, and correspond to the productive class in cities as distinguished from the business and mercantile classes. A license tax for some kinds of business privileges in cities, for revenue, will greatly relieve the tax on real estate there and be more just, and help the great mass of people in the place that will do the most good, and where it is now most needed—it will lessen the rent for homes, the prime necessary for the life, health, happiness, development and progress of mankind.

(*To be Continued.*)

MEDICAL MEN AND THE ARMY CANTEEN.

The Association of Military Surgeons, in session at St. Paul, Minn., May 30, 1901, passed by a unanimous vote a resolution in favor of the repeal of the anti-canteen law. The resolution, which was presented by Major Louis Livingston Seaman, late Surgeon First United States Volunteer Engineers, is as follows:

"*Whereas,* The Association of Military Surgeons of the United States, now in session at St. Paul, recognizes that the abolition of the army post exchange or canteen has resulted, and must inevitably result, in an increase of intemperance, insubordination, discontent, desertion, and disease in the army; therefore, be it

"*Resolved,* That this body deplores the action of Congress in abolishing the said post exchange or canteen, and, in the interests of discipline, morality, and sanitation, recommends its re-establishment at the earliest possible date."

In the general session of the American Medical Association, June 7, *on the recommendation of the Committee on Legislation,* the following resolutions were adopted:

"*Resolved,* That this body deplores the action of Congress in abolishing the army post exchange or canteen, and in the interests of morality, discipline, and sanitation recommends its re-establishment at the earliest possible date;

"*Resolved*, That the United States Congress be petitioned to repeal at the earliest possible moment the objectionable law which prohibits the army canteen."

The Association of Military Surgeons ordered also that a copy of a paper by Dr. Seaman on his observations in China and the tropics on the canteen, and on the army rations, be sent to each member of Congress and each officer of the Women's Christian Temperance Union. In arguing for the re-establishment of the post exchange Dr. Seaman said, in part:

"It is not my purpose to review the evidence on this subject. That was pretty thoroughly thrashed out during the debate in Congress, but there was one very important factor that was entirely omitted in the discussion that may furnish a subject for reflection for those who were instrumental in bringing about this lamentable change. The enemies of the canteen seem to have forgotten that when men accustomed to the use of stimulants are deprived of them in one way they will resort to other methods of obtaining their ends. Less than 5 per cent. of the army are total abstainers. Soldiers are not prisoners; they are well-paid men and have their pass days. The habits of the vast majority of them were formed long before their enlistment, and a large proportion of them belong to the class known as drinkers. When the soldier cannot obtain a glass of beer or light wine at the post exchange in camp, the first place he generally strikes for when on pass is the nearest saloon, where in Porto Rico he is served with rum loaded with fusel oil; at home, vile doctored whisky; in the Philippines, vino, a sort of wood alcohol distilled from the nepa leaf; or in China, the samshu, a product of rice—all rank poisons. Then follow excesses to which in his sober moments he would be the last to descend, insubordination, drunkenness, debauchery, or desertion.

"The record of the Summary Court of the Twelfth United States Infantry shows that during February and March, 1900, at Paniqui, P. I., there were between seventy and ninety trials by court martial for each month. Four-fifths of the offenses were 'intoxication from native vino.' A post exchange was established in the latter part of March. From then and until February, 1901, there were never more than twenty trials in any month, and one month the number was reduced to eight. The record shows no more than two cases of 'vino intoxication' in any month. The company commander's report shows there are but eight total abstainers in the regiment.

Disease and Intemperance.

"In reviewing the report of vital statistics at Camp Reilly, you must have observed the high percentage of private diseases, over 50 per cent. of all patients under treatment being for this cause. It is to this distressing factor in connection with the subject of the canteen that your attention is especially invited. Such diseases always claim a large proportion of patients in a military hospital, but I have it on the authority of Lieut. Greenleaf and his assistant, Dr. Lewis, than whom I have met no more conscientious officers in the Medical Department of the American Army, that, since the abolition of the canteen, the percentage of these cases has almost doubled. My own observations in other military hospitals tend to a similar conclusion. The men get their liquor away from the post, and leave the rumhole for the brothel.

"When the canteen was maintained, they drank less, were under better influences, and returned sober and contented to their library and reading room, or their other quarters. When the misguided enthusiasts of the W. C. T. U. stop to reflect that the result of their influence in inducing Congress to abolish the post exchange has produced this enormous increase of wretchedness in the army hospitals and made many a husband, father, or lover the victim of a degrading disease, they may indulge in less self-congratulation and conclude to cease interfering with institutions about which they are so hopelessly ignorant. The post exchange was the most rational compromise that the ripe experience of the ablest officers of the army could devise; it was not abused in the camps, it has been the soldier's friend, often saving him from disgrace and disease worse than death, and the bill abolishing it should have been vetoed by a President who well knew its virtue.

"Congress, when considering the repeal of the Anti-Canteen act, as it must at its next session, will do well to remember that the abolition of the post exchange has not promoted temperance. On the contrary, it has decidedly promoted intemperance, insubordination, discontent, sullenness, disease, and desertion. It has embittered the men and driven them to the very excesses sought to be abolished. You cannot legislate men to be virtuous or to be total abstainers, but you can, by judicious handling, promote chastity and temperance. The canteen fostered moderation. It led the hard drinker to less indulgence and removed the temptation which always clings to forbidden fruit. Its abolition angered the men. A glass or two or beer is not injurious to them, and they know it, and sneeringly criticise Congressmen—paid servants of the Gov-

ernment—who retain their well-patronized cloakroom with its private stock of good old whisky, but who rob the soldiers—other paid servants of the same Government—of their right to take a glass of beer on their camp grounds in their well-disciplined and orderly canteens."

Nevertheless, "The New Voice" is so much accustomed to measure the standard of human excellence and motives of others by its own, that it accounts for these acts of the representative associations of the medical profession in the United States by attributing them to alcoholism, charging that "the men who championed the canteen resolutions and who were responsible for the snap-shot work by which they were foisted upon the association, are drinking men, some of them notoriously hard drinkers."—A baseless and scandalous allegation.

Editorially, the "Journal of the American Medical Association" remarks:

"The opinion of the great majority of those who voted for the resolution was, we believe, that from the evidence offered it is at best a necessary evil. They simply endorsed it as better than the conditions existing without it. It would be unfortunate if the impression should become generally accepted that the representative body of the medical profession favored habitual liquor-drinking *per se,* even when limited to beer and light wines. It appeared, however, to those who voted for the resolution, to be the fact that a considerable portion of the regular army is recruited from a class that has very little control over its appetites, either as regards liquor or other temptations, and that it is not possible otherwise than by the canteen to create at once conditions that will prevent their gratification in ways that are not desirable. The resolution simply was an expression of opinion of those who voted for it that the canteen is under present conditions a necessity as an adjunct to discipline. It would be well, in case it is reinstated, that it should be under such regulations as will forestall temptation to make its beer-selling function a source of profit or to encourage the acquisition of drinking habits in those not already thus addicted. We cannot but recognize the fact that its existence is opposed by the consciences of a very numerous and respectable body of our fellow-citizens, and while many of us may honestly differ with them, it is not, as some of the lay press would apparently have it, without a sincere respect for their worthy aims."

EDITOR'S TABLE.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.

SANITARIAN, AUGUST, 1901.

QUARANTINE AND YELLOW FEVER.

In accordance with the suggestion made at the third Pan-American Medical Congress, in Havana, it has been decided to hold, at an early date, a conference of delegates from the American Republics regarding the institution of a uniform system of quarantine and the determination of measures best adapted to the suppression of yellow fever.

Meanwhile, as well as hereafter, unless our observations are greatly at fault, health officers at Southern ports in the United States and elsewhere, during periods when the temperature ranges above 74 degrees F., should be wary of unclean vessels and certain kinds of cargo and personal baggage from the hitherto recognized yellow fever ports. They should be mindful of many veritable instances of yellow fever outbreaks coincident with the breaking out of the holds of vessels from Havana and other habitually infected ports, regardless of the alleged sole instrumentality of mosquitoes, based upon laboratory experiments. For instances are not wanting when there have been outbreaks of yellow fever wholly apart from mosquitoes; indeed, when there has been no human host, no case of yellow fever within a thousand or more miles of the place of outbreak, whose blood could have been sucked by mosquitoes and transferred to an amenable subject. Moreover, veritable cases of yellow fever can be cited in unusual places, consequent upon exposure to personal clothing and other material several months subsequent to the packing of such material in places where it has been exposed to infection, when mosquitoes have been altogether out of the question.

These references are not intended to call in question the facts demonstrated by the recent reports of the Army Committee, Major Havard and others, showing the agency and danger of a certain species of mosquito—and probably of other insects—in the propagation of yellow fever, but to invite attention to the insufficiency of the evidence, as published in detail in this and preceding issues, to justify some of the conclusions set forth (Sanitarian for June,

pages 5-16), that "yellow fever is not conveyed by fomites, and hence disinfection of articles of clothing, bedding, or merchandise, supposedly contaminated by contact with those sick with this disease, is unnecessary.

"A house may be said to be infected with yellow fever only when there are present within its walls contaminated mosquitoes capable of carrying the parasite of this disease." These are dangerous propositions, not justified by the experiments in the premises, inconsistent with extensive practical knowledge of the disease and controvertible, as we purpose showing at an early date, by actual observation and experience.

INSPECTION OF THE NEW YORK QUARANTINE STATION.

The consulting board of the New York quarantine, consisting of Drs. Bryant, Derby, Janeway, Biggs, Polk, Girdner, Peabody, McLane, Kinnicutt, and Prudden, recently made a careful inspection of the station and the methods of administration. The opinion of the board as to the conduct of this most significant element in the public health systems of the country is indicated in the following expression of approval: "The consulting board expresses its gratification at the admirable condition of the quarantine station; congratulates Dr. Doty on his success in so fully promoting the welfare of the port with such careful consideration of the interests of commerce; and cordially approves his aims and plans for the administration of the quarantine during the coming season."

FOR THE CARE OF CONSUMPTIVES.

Mr. S. W. Haynes, chief examiner of accounts of institutions in the Department of Finance, in his report to Controller Coler last month on the Seton Hospital for Consumptives, at Kingsbridge, shows in detail what is being done for consumptives by different States and nations.

In Germany, he says, there have been established in the last few years nearly one hundred sanatoriums for the treatment of consumptives, with a combined capacity of five thousand. These have been established partly through the Government, partly through private charity and largely through the life insurance companies. In Germany the life insurance companies find it profitable to send their insured who have tuberculosis to sanatoria for treatment, because of what they can save in the payment of insurance money with those who get well, and the deferment of such payment with those whose lives are prolonged. They also profit by the prevention of the spread of the disease.

In England, prior to the present movement on behalf of the consumptives, there were already hospital accommodations to the extent of about two thousand beds. Since this movement began many new sanatoriums have been opened and the old ones have been improved. England has probably three thousand beds for consumptives at the present time.

In France about two thousand eight hundred beds for tuberculosis subjects existed when the present movement began, and sanatoria either have been built since then or are being built at Lyons, Paris, Orleans, Bordeaux, Nancy, Lille, Havre, Canet and Cimiez. The French Government is about completing a sanatorium at Agincourt, at an outlay of over a million francs.

In Russia, under the leadership of the Czars, five sanatoriums have already been established, and a number are under way.

In Italy sanatoriums are being established at Arizanno, Padua, Umbria, Naples, Messina, Taranto, Cadore and Milan. A law has also been passed requiring existing hospitals to set aside wards for the treatment of consumptives.

In Norway, since 1897, three sanatoriums have been established, and two are under way, all under the Government. A number of private sanatoriums have also been opened.

In Denmark a hospital for consumptives, with ninety-four beds, was opened in 1900 for the use of the entire country, and another with 110 beds for the use of the city of Copenhagen only.

In Sweden a large sanatorium for consumptives is at present being built as a jubilee memorial.

In Switzerland there are already seven sanatoriums for poor consumptives, and a number of others have been projected.

In Austria a sanatorium has been established at Alland, and similar institutions are projected in Bohemia, at Maehren and at Steiermarck.

In Hungary a sanatorium for consumptives is at present being erected as a memorial to the late Queen Elizabeth.

In Poland three sanitoriums for consumptives have recently been erected.

In Spain, under the leadership of the royal family, a large national sanatorium for consumptives has been opened at Porta Cœli.

In Portugal Queen Amelia has recently given 20,000,000 reis for the establishment of a tuberculosis hospital.

In Holland the popular young Queen of Holland within a year has given a large sum of money for the establishment of a sanatorium for consumptives.

In Canada there are as yet but two sanatoriums for consumptives, with a combined capacity of seventy-five beds.

In the United States the National Government has established sanatoriums in New Mexico for the treatment of tubercular marine hospital patients, and for consumptives of its army.

The State of New York has at present ten sanatoriums for consumptives under private management and one projected sanatorium to be supported by the State. They have an aggregate of six hundred beds.

Of the above named ten, three are situated in the city of New York.

The Board of Estimate and Apportionment appropriated for these three institutions in 1901 $70,010. Of this amount the Seton Hospital, Spuyten Duyvil, received $30,000; St. Joseph's Hospital, One Hundred and Forty-third Street and St. Ann's Avenue, $34,010, and the Brooklyn Home for Consumptives, Kingston Avenue, Brooklyn, $6,000.

The State of New York appropriated $50,000 during the last session of the Legislature for a hospital site, and is asked to appropriate $100,000 during the present session of the Legislature for buildings and maintenance.

TUBERCULOSIS AS A COMPLICATION IN A MEDICO-LEGAL SUIT.

A case of considerable medical interest was decided by a jury award in the Supreme Court on June 17. Mrs. Kate Hoey, the widow of James J. Hoey, who died in September last from acute tuberculosis, recovered a verdict for $12,500 in an action against the Metropolitan Street Railway Company, in which she claimed $25,000 damages on the ground that her husband's death was the result of injuries received by him in a street-car collision on December 11, 1899. The immediate effects of the accident were contusions on the head and trunk and an injury to the spine, which resulted in atrophy of the limbs and hysteria. The defense set up by the company was that Hoey was suffering from tuberculosis at the time the accident occurred, and that the collision was in no way responsible for his death nine months afterward. The jury, basing their verdict on the medical testimony presented, decided that the tuberculosis was the indirect effect of the injuries received and found for the plaintiff, holding that the deceased was not the subject of the disease at the time of the accident.

SANITARY RESORTS.

Summer resorts are not synonymous with sanitary resorts. Many of them are whited sepulchres, beautifully displayed and

widely advertised, but devoid of sanitary conditions. Pretentious sanitary appointments should be traced to their outfalls, or rather infalls, frequently into shallow excavations, or into a barrel or two on end, with their heads knocked out, standing stench-receptacles for insoluble deposits while draining off the liquid filth into the porous soil around and the well in the midst; no better than the soil-saturating privy pits still maintained throughout some villages to such an extent as to spread their stench through the atmosphere roundabout.

Many beautifully displayed summer cottages and delightfully shaded old farm houses, with a profusion of lilac and other odorous flowers, require close scrutiny in these respects; and most of all, those which supply milk in abundance, chickens and eggs without stint and fresh garden vegetables more than can be eaten, provided and cultivated oftentimes regardless of the need of clean cow-stables, clean milking and fowl-house manure distribution. Moreover, beautiful vegetable and small fruit gardens are not infrequently dangerous temptations. Such products flourish most luxuriantly in manure beds. Celery, asparagus, lettuce and radishes are suggestive examples of the need of clean washing-water and plenty of it. Kitchens, kitchen sinks, dish waters and dish cloths are also subjects of importance, but unfortunately not often of interest to summer boarders. They too commonly accept conditions on trust and risk the cost.

"SUMMER COMPLAINTS"

Of infants and children particularly, common in hot weather on account of the incurred liability of their food to fermentation and acidity, may be prevented by the careful use of an efficient and non-irritating antacid to such food before it sours; or by the prompt administration of such an antacid on the occurrence of the first symptoms of indigestion caused by such food—sour breath, nausea and vomiting. One of the most effective as well as the most eligible of antacids in such cases in Phillips' Milk of Magnesia. Being a hydrate it has the characteristic affinity for acids common to hydrates, while it is wholly devoid of carbon dioxide and hence, unlike any other form of magnesia, or other alkaline carbonates, does not distend or produce concretions in the gastro-intestinal tract. Given alone, besides its antacid properties, it is an efficient and painless aperient. It also combines advantageously with carminatives and antiseptics. With *Listerine* in particular, it forms an exceptionally acceptable and effective remedy in such requirements.

INFECTIOUS DISEASES SPREAD THROUGH THE MILK SUPPLY.

George M. Kober ("Journal of Medical Sciences," May, 1901) states that sour milk, or milk which is on the point of turning, is very liable in infants, children, or persons with feeble digestion, to produce gastric and intestinal catarrhs of an acute or chronic character. The sediment, so common in milk, is composed of epithelial débris, hairs of the cow, organic and inorganic dust particles, bacteria, fungi and spores of every description, and excrementitious matter from the cow. Fully ninety per cent. of the bacteria found in such specimens are fecal bacilli, which multiply very rapidly and hasten decomposition of the milk. Some samples of milk which have been analyzed showed a higher number of bacteria than the sewage water of the city. Milk may be rendered unfit for use and cause sickness in children by means of improper food of the animal or while the animal is being treated with strong remedial agents, which may be excreted in the milk. Milk may be morbific, as the product of a diseased animal; tuberculosis, for example, may be transmitted. Milk may acquire infective properties after it leaves the udder of the animal. Numerous instances have been observed in which outbreaks of typhoid fever, scarlet fever, and diphtheria, by their sudden and explosive character, affecting families living in streets and localities supplied by the same milk man, naturally pointed to the milk-supply as a common cause. Bacteriologists have proved that disease germs not only live but often also proliferate in the milk. Infection may be carried by water, through the agency of scrubbing-brushes, dish-cloths, and flies. In the epidemics analyzed the largest number has been recorded by English authors, the next by American. This is probably due to the fact that English and Americans usually drink raw milk, while on the Continent it is nearly always boiled. Since careful inspection has been given to the milk-supply, there was shown in one year a decrease of about fifty per cent. in the deaths from diarrhœal diseases of children, and even then the inspections extended over only one-third of the source of milk-supply.

MILK ADULTERATION IN GERMANY.—Consul-General Guenther, of Frankfort, February 11, 1901, writes that, according to the report of the Heilbronn Board of Health, of 122 samples of milk examined, 67 proved to be adulterated with 20 to 120 per cent. of water.

Under date of February 25, Mr. Guenther adds:

A test of 3,794 samples of milk, made in Hamburg in 1900, resulted in proving 12 per cent. objectionable; 25 per cent. of this on account of addition of water. Fifty per cent. of the cans were objected to. A member of the Board of Health has prepared statistics showing that 8 per cent. of the children born in that city die in consequence of malnutrition.

SUMMER CLOTHING.

The selection of summer clothing, "American Medicine" wisely remarks, is a matter of considerable importance not only from the influence it may have in comfort, but also in promoting health. Yet this is a matter to which most people give comparatively little attention, and the question of style and appearance is certainly more considered than the effect on health. From the hygienic standpoint we are concerned with the questions of what form and quality of clothing will maintain the proper body-temperature, protect from changes of temperature and absorb the sweat with the excretory products contained in it. In both summer and winter, as a general rule, too much, too heavy, and irrational clothing is worn by most people. This keeps the body overwarm, and promotes free sweating; thus the skin is most of the time kept covered with moisture, in a condition in which it reacts most readily to changes of temperature and is likely to become suddenly chilled. The frequent summer coughs and colds, most of them, arise in this way. Besides weight of clothing, the ventilation, if we may use that term in this sense, is important. Goods of loose texture, loosely fitting and without constricting collars or bands, allow free circulation of air and escape of perspiration vapor. Clothing which is not properly ventilated retains a layer of steam-like perspiration which gives a feeling of oppression. The sweater is an example of a properly ventilated garment, and every athlete knows how warm and comfortable a sweater is. Its loose mesh permits of free escape of perspiration, and the skin dries rapidly, but without becoming cold. Very little clothing is needed to maintain the bodily temperature in summer, but it is necessary to protect against sudden changes in our changeable climate. Wool, cotton, linen and silk each have their enthusiastic advocates. Experience has very certainly shown that woolen garments are better adapted to protect those whose occupations subject them to very sudden and considerable changes of temperature, especially if accompanied with much exertion. But it is unfortunate that practically no light, loose mesh woolen undergarments are to be had

that have any durability; and thus for persons engaged in sedentary occupations the lighter cotton and linen mesh are better adapted. For both cleanliness and health very frequent changes of underwear are needed, thus keeping the skin in the very best condition to eliminate as much waste matter as possible, and this is fully as important as the material of the garment worn.

Less clothing, looser mesh garments, fewer stiff collars and constricting bands are needed reforms in summer clothing for our hot cities. If sensible people will demand such clothing, the demand will not long remain unsupplied and what sensible people wear soon becomes, to a certain degree at least, the fashion.

POISONOUS "WILD GRAPES."

A curious case is reported from Sharon, Penn., which goes to show that a knowledge of common wild plants is extremely valuable. Three boys ate some berries which looked like wild grapes, and in a short time were seized with convulsions and died. The action of the poison was so much like that of strychnine that a worthy farmer was accused of putting that drug into cider to punish the boys for stealing it. Fortunately for the farmer, he had not bought any poison to kill bugs on his crops, and so escaped a serious time, for nothing could be proved against him. Local physicians sent specimens of the berries found in the boys' pockets to Prof. Thomas Meehan, of the Academy of Natural Sciences in Philadelphia, and he identified them as moon seed. In his report he said: "The plant is the moon seed—appropriately so called from the form of the seed within the pulp—and botanically Menispermum Canadense. It is very closely related to the well-known poisonous drug Cocculus Indicus of the pharmacists. The action of the poison is said to be similar and almost the same as strychnine. The leaves resemble in form those of the English ivy, but are much smaller and thinner. The vine is of slender growth, reaching the height of about ten feet in the season. In the fall and winter there is nothing to be seen but the clusters of shining black berries, resembling the 'frost grape,' and children may readily believe they are gathering and eating grapes. Fortunately, the plant is not very common." This plant may indeed be uncommon, but it is a good thing to know that it exists.

THE RIGHT KIND OF CHRISTIAN SCIENCE.

Father Roach, of the Sacred Heart Church on West Fifty-first Street, administered extreme unction, a few weeks since, to Bernard McManus, a laborer living with his family at 555 West Fif-

tieth Street. When McManus confessed that he had taken paris green with suicidal intent, the priest immediately gave him a dose of mustard as an emetic, and by doing so undoubtedly saved the man's life.

McManus is thirty-five years old and lives with his wife and several children on the top floor of a tenement. He had not been working lately. When he returned home about 6 o'clock, his supper was on a table, and his wife told him to sit down and eat.

"I'm not going to eat any more," said McManus. "I've taken paris green, and I'm going to die pretty soon."

His wife thought he was joking, and pressed him to eat his supper before it got cold. It was not long, however, before McManus became violently ill. His wife became alarmed and made him go to bed, and then she summoned Father Roach.

Then, after receiving the sacrament, McManus told the priest that he had taken 5 cents' worth of paris green, and that he wanted to die. The priest suspended his priestly duties and called for mustard, which he mixed with water and administered to McManus. Father Roach then telegraphed to the Roosevelt Hospital for an ambulance. Dr. Grant responded and took McManus away with him.

Then Father Roach went to the West Forty-seventh Street Station and told Sergt. Farrell of what he had learned and done. Policeman Mayer was sent to the hospital and McManus was made a prisoner. McManus was still very ill when he reached the hospital.

ATHLETICISM AND LONGEVITY.

Inquiry as to the length of life of the men who in late years have distinguished themselves in college athletics has seemed to show comparatively great mortality and early death. The statistics are not complete, and perhaps with full data this conclusion would not stand. But here comes Dr. James M. Whiton ("Boston Courier," June 8), a graduate of Yale in the class of 1853, with the story of the first Harvard-Yale rowing regatta, in which he presents some very interesting figures bearing on this point. "It is noteworthy," he writes, "that at the end of nearly forty-nine years nearly one-half are still living—twenty of forty-one, or 48.78 per cent. Of the twenty-seven who rowed the race, fifteen survive, or 55.55 per cent. But in the Yale Class of Fifty-three, though this included, as President Woolsey critically remarked, 'a great many boys,' only fifty now survive of one hundred and eight, or 46.29 per cent. Of the Harvard Class of Fifty-

three, but forty of ninety survive, or 44.44 per cent. The fact will be put to the credit of college athletics, but it should also be noted that they were never then carried to excess." In the last sentence of Dr. Whiton's statement the probable explanation will be found. College athletics in the earlier days had more of nature and spontaneity and less of science and artificiality. There were no hired trainers, but the boys prepared for their races in a sensible way and did not faint in their boat or go to pieces through nervous strain, or curl up and cry hysterically when beaten. These are the college athletes—although they did not call thmselves by that name in the plain old days—who stay on and enjoy life and are good for anything of their weight half a century later.

THE ASSOCIATION OF AMERICAN MEDICAL EDITORS.

The annual meeting, held at St. Paul, June 3-5, 1901, was a most successful meeting. Of especial moment was the paper presented by Dr. Burnside Foster, of St. Paul, entitled "Some Thoughts on the Ethics of Medical Journalism," which was discussed by Drs. Lancaster, Gould, Love and others. At the instance of Dr. Foster, a committee consisting of Drs. Simmons, editor of the "Journal of the A. M. A.," Gould, of "American Medicine," and Foster, of the "St. Paul Medical Journal," was appointed to amend the constitution and by-laws of the association by adding certain rules concerning the nature of the advertising which is to be admitted to the pages of the journals in affiliation with the association. These rules are to be binding on all members, the committee also being advised to suggest such revision of the constitution and by-laws as may be deemed advisable. Among other papers read were that of Dr. John Punton, entitled "The Relative Value of Medical Advertising"; that of Dr. Dudley S. Reynolds, entitled "Improvement in Medical Education"; Dr. Harold N. Moyer, "Relation of the Medical Editor to Original Articles." The association adopted resolutions favoring the establishment of a psycho-physiological laboratory in the Department of the Interior at Washington, D. C.

The annual dinner of the association was held June 3, President Stone acting as toastmaster. The officers for the ensuing year were elected as follows: President, Dr. Alex. J. Stone, of St. Paul; vice-president, Dr. Burnside Foster, of St. Paul; secretary and treasurer, Dr. O. F. Ball, of St. Louis. The executive committee appointed for the ensuing year consisted of Drs. Gould, Matthews, Lillie, Fassett and Marcy. The next meeting will be held at Saratoga Springs, N. Y., in June, 1902.

A CHICAGO SANITARIUM.

Chicago is to have a big private hotel and sanitarium, where the wealthy patients of five of the leading physicians and surgeons can be treated and accommodated. The site has been secured, plans have been drawn, and a building permit will be asked for within a few days.

The Chicago practitioners who form the sanitarium interests are Drs. Frank Billings, Nicholas Senn, J. B. Murphy, Franklin H. Martin and Phineas I. Mulvane. The latter two are to have charge of the management of the institution, together with an advising board of directors. Willis G. Jackson, department manager in the insurance firm of Fred S. James & Co., in the New York Life Insurance Building, has charge of the financial part of the undertaking.

The site secured is at the northwest corner of Eldredge court and Michigan avenue, immediately adjoining the home of the Young Women's Christian Association, 288 Michigan avenue. It is owned by the University of Chicago, and has been leased to the medical men for a period of ninety-nine years.

They will erect a handsome structure on the ground, to be eight stories high, stone front, facing south in the court, to be equipped with the most modern conveniences, and to cost $400,000. The plans have been drawn and approved by those interested, and a photograph of the proposed structure shows that it will be in keeping with other buildings facing the Lake Front Park.

POPULATION OF THE UNITED STATES, WITH DETAIL OF INCORPORATED PLACES, 1900.

Census bulletins, May 29th and June 8th, of the Twelfth Census, 1900, eliminating the population of Alaska, Hawaii, Indian Territory and Indian reservation, report the population of the United States, 75,559,258, and of incorporated places as follows:

Of 1,000,000 and over, 3; of 500,000 and under 1,000,000, 3; of 400,000 and under 500,000, 1; of 300,000 and under 400,000. 5; of 200,000 and under 300,000, 8; of 100,000 and under 200,000, 19; of 50,000 and under 100,000, 40; of 25,000 and under 50,000, 83; of 20,000 and under 25,000, 52; of 15,000 and under 20,000, 72; of 12,000 and under 15,000, 75; of 10,000 and under 12,000, 62; of 9,000 and under 10,000, 50; of 8,000 and under 9,000, 45; of 7,000 and under 8,000, 75; of 6,000 and under 7,000, 98; of 5,000 and under 6,000, 147; of 4,000 and under 5,000, 212; of 3,000 and under 4,000, 347; of 2,500 and under 3,000, 257; of

2,000 and under 2,500, 413; of 1,500 and under 2,000, 601; of 1,000 and under 1,500, 1,116; of 500 and under 1,000, 2,501; places under 500, 4,318.

New York, Chicago, and Philadelphia each had more than a million inhabitants in 1900, the same as in 1890, but since the latter census the area and population of New York City have been increased greatly, and with its 3,437,202 inhabitants it now represents the second largest city in the world, London alone exceeding it in population. The city of Brooklyn, which had a population of 806,343 in 1890, has become since 1890 a part of New York City and no longer exists as a separate municipality. As now constituted, and in detail for each borough in the city, Manhattan borough, 1,850,093; Bronx borough, 200,507; Brooklyn borough, 1,166,582; Richmond borough, 67,021; Queens borough, 152,399; New York City, 3,437,202. St. Louis, Boston and Baltimore, each of which had in 1890 upward of 400,000 inhabitants, have now passed the half-million mark, and with the first three cities named constitute the six great cities of the country.

Cities of 300,000 and under 400,000: Cleveland, 381,768; Buffalo, 352,387; San Francisco, 342,782; Cincinnati, 325,902; Pittsburg, 321,616.

Cities of 200,000 and under 300,000: New Orleans, La., 287,104; Detroit, Mich., 285,704; Milwaukee, Wis., 285,315; Washington, D. C., 278,718; Newark, N. J., 246,070; Jersey City, N. J., 206,433; Louisville, Ky., 204,731; Minneapolis, Minn., 202,718.

Cities of 100,000 and under 200,000: Providence, R. I., 175,597; Indianapolis, Ind., 169,164; Kansas City, Mo., 163,752; St. Paul, Minn., 163,065; Rochester, N. Y., 162,608; Denver, Colo., 133,859; Toledo, Ohio, 131,822; Allegheny, Pa., 129,896; Columbus, Ohio, 125,560; Worcester, Mass., 118,421; Syracuse, N. Y., 108,374; New Haven, Conn., 108,027; Paterson, N. J., 105,171; Fall River, Mass., 104,863; St. Joseph, Mo., 102,979; Omaha, Neb., 102,555; Los Angeles, Cal., 102,479; Memphis, Tenn., 102,320; Scranton, Pa., 102,026.

The 10,602 incorporated places in 1900 contain, in the aggregate, 35,849,516 inhabitants, as compared with a total of 26,079,828 persons living in incorporated places in 1890. The combined population of the 10,602 incorporated places in 1900 constitutes very nearly one-half (47.1 per cent.) of the entire population comprehended by the present Federal census, exclusive of the population of Alaska and of persons in the military and naval service of the United States stationed abroad, representing an aggregate

population of 76,148,576. In equivalent areas, the whole number of persons living in the 7,578 incorporated places at the census of 1890 constituted a little more than two-fifths (41.4 per cent.) of the total population at that census, representing, in the aggregate, 63,037,704 persons.

Aside from the District of Columbia, which is considered for census purposes to be coextensive with the city of Washington, New York has the largest percentage of its population living in incorporated places; that is to say, out of a total population in 1900 of 7,268,894 in that State, 5,642,999, or 77.6 per cent., live in incorporated places, as compared with 69.4 per cent. in 1890. More than three-fifths of the population of incorporated places in New York in 1900 is found in the city of New York, which alone contans 3,437,202 inhabitants and constitutes 47.3 per cent. of the present population of that State. New Jersey has very nearly the same proportion (76.2 per cent.) of its population in 1900 living in incorporated places, as in New York State, equivalent in these two States to more than three-fourths of their entire population. In six other States, namely, Massachusetts, Illinois, Rhode Island, Pennsylvania, Colorado and Connecticut, from three-fifths to somewhat more than two-thirds of the total population live in incorporated places, while in seven States, namely, Delaware, Utah, California, Ohio, Maryland, Washington, and Michigan, there is between 50 and 60 per cent. of the population in 1900 living in incorporated places.

Mississippi has the smallest percentage of population living in incorporated places in 1900, being but 14.7 per cent., and is closely followed by New Mexico with 15.2 per cent. Seven other States and Territories have less than one-fifth of their total population in incorporated places, namely, Arkansas, 17 per cent.; Oklahoma, 17.1 per cent; Alabama, 17.7 per cent.; North Carolina, 17.9 per cent.; Indian Territory, 19.1 per cent.; South Carolina, 19.5 per cent.; and Tennesse, 19.8 per cent.

The incorporated places containing between 1,000 and 2,500 inhabitants in 1900 number 2,130 and represent a combined total of 3,304,700 persons, constituting 4.3 per cent. of the country's present population, while those incorporated places having under 1,000 inhabitants in 1900 number 6,819 and contain 3,007,075 persons, or 4 per cent. of the total population.

Places having less than 1,000 persons, on the other hand, constitute very nearly two-thirds (64.3 per cent.) of all the incor-

porated places in 1900, but contain considerably less than a tenth (8.4 per cent.) of the entire population resident therein.

Among several States and Territories, Oklahoma shows the largest percentage of increase since 1890. The Territory of Oklahoma was opened to settlement in May, 1890, and at the census taken one month later, in June, 1890, had a population of 78,475, including 16,641 Indians and other persons specially enumerated but not included in the general report on population at that census. At the census of 1900 it had a population of 398,331, or an increase since 1890 of 407.6 per cent.; in other words, its population in 1900 is more than five times as large as the entire population returned in 1890.

The second largest percentage of increase in population since 1890 is found in Indian Territory, being somewhat more than 100 per cent. The population of Indian Territory was specially enumerated in 1890, but no part of the population thus enumerated was included in the general report on population. There were 180,182 Indians and other persons enumerated in Indian Territory in 1890, but this number has been increased to 392,060 in 1900, showing an increase of 211,878, or 117.6 per cent., during the ten years.

The population of Idaho has increased 82.7 per cent. since 1890, while the population of Montana has increased 70.3 per cent., and that of North Dakota 67.1 per cent. The five States and Territories named are the only ones in which the population has increased more than 50 per cent. during the ten years from 1890 to 1900, but Wyoming has increased its population during the same period by 47.9 per cent. and Washington its population by 45 per cent.

Nevada is the only State which shows an actual decrease in its population since 1890, but for this State there was a much larger decrease reported for the preceding decade, or 26.5 per cent. from 1880 to 1890 as against 10.6 per cent. from 1890 to 1900. The smallest percentage of increase during the ten years is that shown by Nebraska, being less than one-half of 1 per cent., while for the same period there has been an increase of only 3 per cent. in the population of Kansas, 3.4 per cent. in that of Vermont, and 5 per cent. in that of Maine.

There has been a gain during the decade of not quite 10 per cent. in the population, respectively, of Delaware and New Hampshire, and of between 10 and 40 per cent. in the population of each of the remaining States and Territories, the largest percentage

among this class being that of Arizona, or 39.3 per cent., and the smallest percentage that for Virginia, or 12 per cent.

The gross area (land and water surface) of the United States, exclusive of Alaska and Hawaii, is 3,025,600 square miles. The United States at the first census, in 1790, comprised only the territory between the Atlantic ocean and the Mississippi river, representing a gross area of 827,844 square miles. There was no change in the gross area of the country at the census of 1800, but in 1803 there were added by the Louisiana purchase more than a million square miles, making the gross area of the country at the census of 1810, 1,999,775 square miles. In 1819 our territory was increased by the purchase of the Floridas from Spain to 2,059,043 square miles, which represented the gross area of the country at the censuses of 1820, 1830, and 1840. Between 1840 and 1850, there was a large acquisition of territory from Mexico, so that at the census of 1850 the gross area of the United States comprised 2,980,959 square miles. By the Gadsden purchase in 1853 our territory was further increased to 3,025,600 square miles, which constitutes the present area of the country, exclusive of the areas of Alaska and Hawaii. The Territory of Alaska, comprising 590,884 square miles, was purchased from Russia in 1867, and the Territory of Hawaii, comprising 6,449 square miles, was acquired by annexation in 1898. Including Alaska and Hawaii, the entire area of enumeration at the present census comprises 3,622,933 square miles.

DENSITY OF POPULATION.

Excluding the District of Columbia, which is in effect a municipality, Rhode Island, with 407 inhabitants to the square mile in 1900, is the most densely settled State in the Union, while Massachusetts comes next, with not quite 349 inhabitants to the square mile. New Jersey, with a little more than 250 inhabitants to the square mile in 1900, is the third State in point of density of population, while Connecticut, with somewhat more than 187 inhabitants to the square mile, occupies fourth place. Four other States have more than 100 inhabitants to the square mile in 1900, namely, New York, with 152.6 inhabitants; Pennsylvania, with 140.1 inhabitants; Maryland, with 120.5 inhabitants; and Ohio, with 102 inhabitants to the square mile.

Alaska has, on the average, but one-tenth of 1 person to the square mile in 1900, and, similarly, Nevada has only four-tenths of 1 person to the square mile. Wyoming has not quite

1 inhabitant to the square mile in 1900, while Arizona has an average to the square mile of 1.1 inhabitant; New Mexico of 1.6 inhabitant; Montana of 1.7 inhabitant; and Idaho of 1.9 inhabitant.

The newly acquired Territory of Hawaii shows an average density of population in 1900 of not quite 24 persons, ranking in this respect between Maine, with 23.2 persons, and Arkansas, with 24.7 persons to the square mile.

CENSUS OF LEPERS IN THE UNITED STATES.

The Surgeon-General of the Marine Hospital Service has undertaken a census of lepers in the United States, of which there are said to be at least 1,000. The commission, consisting of Surgeon J. H. White, chairman, and Passed Assistant Surgeons G. T. Vaughn and M. J. Rosenau, have been working under Congressional authority since 1899, making a scientific investigation of the extent of the disease in America. They have sent circular letters to physicians, health officers, hospital superintendents and others in six hundred localities, covering the entire country, asking for reports and information regarding leprosy patients. But only 2,000 replies have been received. From these 277 lepers have been located and their names and addresses obtained. About one hundred are known to live in New Orleans, many of whom are well-to-do persons of good families. In Minnesota about twenty cases have been reported, the disease there being found mostly among the Scandinavians living in the rural districts. In New York seven cases have been reported, while in Chicago only three have been found so far. In San Francisco fifteen cases are known, twelve of which are confined in the pest-house. There are fifteen in North Dakota, and only two in South Dakota. In New Mexico there are at least a dozen, and Baltimore reports three cases. The remainder are scattered throughout the country. Owing to the fact that three-fourths of the circulars have brought no replies, especially from suspicious districts, the authorities estimate that only about one-fourth of the cases of leprosy have as yet been reported.

CENSUS OF EUROPEAN NATIONS.

The census returns show the population of France to be, in round numbers, 38,600,000, an increase of 330,000 on 1896. To this small increase Paris and its suburbs contribute 292,000, the greater part of which number is due to foreign immigrants, so that the rest of France gives an increase of only 38,000. Since

1850 the population of France, allowing for alterations of boundaries, has only increased from 35,000,000 to 38,000,000, whereas that of the United Kingdom has risen from 27,000,000 to 41,000,000, Germany from 35,000,000 to 56,000,000, Austria from 30,000,000 to 45,000,000, Italy from 23,000,000 to 32,000,000 and Russia, partly owing to annexations, from 66,000,000 to 128,000,000. The population of Belgium, according to official figures, has reached 6,744,532, of which total 3,362,436 are males; 2,485,384 speak Flemish only, 2,485,072 speak French only, and 700,997 both languages.

CENSUS OF ENGLISH CITIES.

London, June 14.—A preliminary census volume, just issued, gives the population of the five largest cities of England, exclusive of London, as follows: Liverpool, 684,947; Manchester, 543,969; Birmingham, 522,182; Leeds, 428,953; Sheffield, 380,717. The total number of males in England and Wales is 15,721,728; of females, 16,804,347, men serving abroad in the army, navy, and merchant marine being excluded. Seventy-seven per cent. of the total population is in the cities and 23 per cent. is in rural districts, as against 75 and 25 per cent., respectively, in 1891.

The population of Great Britain almost doubled during the Victorian era, but that of Ireland declined from 6,801,000 in 1821 to 4,456,000 in 1901.

The mean annual death rate has been steadily declining since 1861. The birth rate has declined with still greater rapidity.

POPULATION OF THE LARGEST CITIES IN THE WORLD.

THE ALBANY ARGUS gives the following as the population of the ten largest cities of the world, and emphasizes the fact that, in the order of their number, the United States has three, while no other country has more than one.

London, 1901, 4,536,034; New York, 1900, 3,437,202; Paris, 1896, 2,536,834; Berlin, 1901, 1,884,151; Chicago, 1900, 1,698,575; Canton, China, 1,600,000; Tokio, 1898, 1,452,564; Vienna, 1891, 1,364,548; Philadelphia, 1900, 1,293,697; St. Petersburg, 1897, 1,267,023.

MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

NEW YORK.—Bulletin of State Department of Health for May reports: Population, 7,268,000: Total deaths, 10,327; death rate, 16.6; deaths under five years of age, 2,620; percentage of deaths under five years to total mortality, 25.4; from zymotic

diseases, per 1,000 from all causes, 11.2; from cerebro-spinal meningitis, 43; typhoid fever, 96; malarial diseases, 15; smallpox, 67; scarlet fever, 226; measles, 95; erysipelas, 44; whooping cough, 69; croup and diphtheria, 263; diarrhœal diseases, 236; acute respiratory diseases, 1,406; consumption, 1,224; puerperal diseases, 92; diseases of the digestive system (not diarrhœal), 649; urinary system, 769; circulatory system, 1,114; nervous system, 1,195; cancer, 434; accident and violence, 590; old age, 415; unclassified, 1,285.

City of New York, 3,526,517: Total deaths, 5,379; death rate, 18.0; deaths under five years, 1,733; from cerebro-spinal meningitis, 23; typhoid fever, 28; malarial diseases, 8; smallpox, 66; scarlet fever, 193; measles, 39; erysipelas, 31; whooping cough, 20; croup and diphtheria, 198; diarrhœal diseases, 179; acute respiratory diseases, 371; consumption, 659; cancer, 214.

Smallpox continues unabated; indeed, it is increasingly prevalent throughout the city, with an average of from ten to fifteen new cases daily. During the four weeks ending June 29, there were 344 cases reported, with 62 deaths. Since the first of January, in Manhattan alone, about nine hundred cases have been discovered and given more or less official attention. This is more than the record for any previous year since the Health Department was established. And in the Borough of Brooklyn it is proportionally prevalent. Total number of cases reported since the outbreak of the disease, in November, 1900, 1,521, with 220 deaths—a condition remarkably inconsistent with the energy that has heretofore characterized the Health Department, and to be accounted for in no other way than by negligence. For of all departments of the city government none, since its organization on a scientific basis, has ever been so heartily supported by public sentiment, above all in time of threatened epidemic—in this case no longer threatened, but under disgraceful headway. The Department, as at present organized, can no longer be regarded as a safeguard to the public health. It is not lacking in competency, but in discipline and energy, and for the lack of these qualities it merits public reprobation and speedy supplanting.

Deaths from Heat.

The recent heated term from June 27 to July 6 was one of the most fatal ever known in New York. During the week ending July 6, the total number of deaths from heat in the five

boroughs was 989. For the Boroughs of Manhattan and the Bronx the number was 689; for Brooklyn, 264; for Richmond, 12, and for Queens, 24. The records cover a period from 12 o'clock noon on June 29 to July 6 at noon, when the heat was most intense. The greatest number of deaths in any one day was 61, on July 2. On that day there were 660 ambulance calls at nine hospitals in Manhattan, most of them for cases of sun-stroke, but the total number of prostrations was doubtless much larger, for many were overcome and some died in their homes, while others were taken away from where they were stricken by private conveyances. In the Borough of Brooklyn, Dr. Byrne, registrar of vital statistics, reports the number of deaths from all causes 938, of which 257 were due to the heat.

In Philadelphia, 857 deaths were reported from the same cause; in Baltimore, 451—the largest number for a week of which there is any record—of these 236 were of children under five years.

It is admitted that not less than 50 per cent. of the total mortality of these and the New Jersey cities for the week ending July 6, was directly or indirectly attributable to the intense heat.

Last year, for the same period, the total number of deaths from heat was but 8.

The bureau records only go back to the time of consolidation as to all the boroughs, but as far as Manhattan and the Bronx are concerned at no time in the history of the Health Department have there been so many deaths from heat in a week as during the one ended on July 6. The nearest approach to the figure was in the week ended August 15, 1896, when for the two boroughs there were 671 deaths, or 11 less than the number recorded this year.

How 3,000 Lives May Be Saved Yearly in New York.

The "New York Journal" recently reported an interview with Dr. Hermann M. Biggs, Bacteriologist of the Health Department, on the new tenement house law, with special reference to tuberculosis. Dr. Biggs said, in part:

"It is shown by the death records that more than one-quarter of all deaths occurring in New York City in the period of greatest usefulness—fifteen to sixty-five—are due to tubercular diseases.

"I do not believe more than two-thirds of the cases in the boroughs of Manhattan and the Bronx are now reported, although

more than 9,000 cases have been reported in the city during the year 1900."

Light, air and cleanliness are the factors needed to put the disease under control, Dr. Biggs said, and he gave instances from the maps prepared in the department to show how tuberculosis sticks to localities where it has once been introduced in the crowded districts where these factors are lacking.

"For example, on the block on Cherry Street, between Pearl and Roosevelt, 102 cases came to the notice of the department from April, 1894, when the work was begun, to January 1, 1899. The population of this block as enumerated by the sanitary police of the Department of Health, was 1,165. On another block bounded by Cherry, Market, Catharine and Monroe streets, with a population of 3,688, there were 241 cases of tuberculosis. In a third one, which includes the Chinese quarter, bounded by Chatham, Mott, Bayard streets and the Bowery, with a population of 2,102, there were 206 cases."

Tables which form an important part of the report make it clear that the percentage of deaths from tuberculosis is clearly dependent upon the crowding of population, not only in this city, but in others.

"The prevalence of tuberculosis in the tenement houses and lodging houses of New York," Dr. Biggs declares, "may be greatly restricted, and finally, under proper conditions, I believe it would be possible to almost suppress it."

Dr. Biggs recommends that regulations should be adopted providing at least 600 cubic feet of air space for each adult in tenement houses and 400 cubic feet for each child, with ample provisions for light and ventilation, and that no consumptives be allowed to live or lodge in lodging houses. Hospital provision, he says, should be made by the city at once for 2,500 or 3,000 consumptives.

The renovation and disinfection of apartments occupied by consumptives should be general and thorough. Spitting in all public places should be prevented. Dr. Biggs concludes that proper measures such as he points out would reduce the death rate from tuberculosis in this city by one-third in five years.

"This would mean the saving of 3,000 lives annually," he says. "No other measures offer promise of such large returns in the diminution of suffering and death."

Borough of Manhattan, 1,873,562: Total deaths, 3,006; death rate, 18.8; deaths under five years, 1,010; from cerebro-spinal

meningitis, 14; typhoid fever, 18; malarial diseases, 1; smallpox, 5; scarlet fever, 88; measles, 21; erysipelas, 25; whooping cough, 12; croup and diphtheria, 116; diarrhœal diseases, 99; acute respiratory diseases, 523; consumption, 334; cancer, 131.

Borough of the Bronx, 222,124: Total deaths, 374; death rate, 20.0; deaths under five years, 97; from cerebro-spinal meningitis, 14; typhoid fever, 18; malarial diseases, 1; smallpox, 57; scarlet fever, 12; croup and diphtheria, 7; diarrhœal diseases, 9; acute respiratory diseases, 40; consumption, 102; cancer, 10.

Borough of Brooklyn, 1,209,064: Total deaths, 1,714; death rate, 16.6; deaths under five years, 549; from cerebro-spinal meningitis, 7; typhoid fever, 8; malarial diseases, 4; smallpox, 2; scarlet fever, 87; measles, 17; erysipelas, 4; whooping cough, 6; croup and diphtheria, 65; diarrhœal diseases, 69; acute respiratory diseases, 266; consumption, 194; cancer, 64.

Borough of Queens, 162,834: Total deaths, 202; death rate, 15.6; deaths under five years, 60; from malarial diseases, 2; smallpox, 2; croup and diphtheria, 5; acute respiratory diseases, 32; consumption, 21; cancer, 4.

Borough of Richmond, 68,933: Total deaths, 83; death rate, 14.5; deaths under five years, 17; scarlet fever, 2; erysipelas, 1; croup and diphtheria, 5; diarrhœal diseases, 2; acute respiratory diseases, 5; consumption, 8; cancer, 5.

Albany, 94,151: Total deaths, 130; death rate, 17.4; deaths under five years, 21; from typhoid fever, 2; scarlet fever, 1; measles, 2; whooping cough, 2; diphtheria, 1; diarrhœa, 1; acute respiratory diseases, 1; consumption, 23; cancer, 5.

Syracuse, 108,374: Total deaths, 129; death rate, 14.0; deaths under five years, 21; from typhoid fever, 1; scarlet fever, 1; erysipelas, 1; diphtheria, 1; diarrhœa, 1; acute respiratory diseases, 9; consumption, 17; cancer, 9.

Buffalo, 352,387: Total deaths, 425; death rate, 14.4; deaths under five years, 120; from cerebro-spinal meningitis, 2; typhoid fever, 5; scarlet fever, 5; measles, 3; erysipelas, 1; whooping cough, 7; croup and diphtheria, 10; diarrhœal diseases, 10; acute respiratory diseases, 67; consumption, 39; cancer, 24.

Rochester, 162,608: Total deaths, 185; death rate, 13.4; deaths under five years, 30; from cerebro-spinal meningitis, 2; typhoid fever, 2; scarlet fever, 1; diphtheria, 2; diarrhœa, 2; acute respiratory diseases, 13; consumption, 26; cancer, 10.

CALIFORNIA.—Los Angeles, 102,472. Report for June: Total deaths, 147—28 under 5; death rate 15.36; deaths from specific infectious diseases, 20; from phthisis, 22; tuberculosis, 7; pneumonitis, 9; heart disease, 20; of the 22 deaths from phthisis, 15 had lived here less than ten years.

COLORADO.—Denver, 136,000: Report for May: Total deaths, 243; death rate, 21.54; deaths under five years, 31; from typhoid fever, 2; scarlet fever, 11; smallpox, 3; croup and diphtheria, 2; erysipelas, 2; diarrhœal diseases, 6; acute respiratory diseases, 20; consumption, 58; cancer, 6.

At the recent meeting of the Colorado State Medical Society, Dr. Henry Sewell reported that in 16 months to May 1, 1901, 1,674 deaths from tuberculosis were reported. In 970 cases the disease originated outside of Colorado. In 480 cases the origin was not given. In 224 cases, or 13.32 per cent., the disease originated in Colorado.

CONNECTICUT.—The State Board of Health Bulletin reports for May: Total deaths, in 164 towns, with an aggregate population of 903,253, 1,056; death rates, in the large towns, 14.7; small towns, 11.9; spinal fever, 4; typhoid fever, 24; malarial fever, 7; measles, 18; scarlet fever, 3; croup and diphtheria, 21; whooping cough, 3; erysipelas, 2; diarrhœal diseases, 20; acute respiratory diseases, 105; consumption, 122; diseases of nervous system, 149; heart diseases, 103; violence, 56.—*Smallpox* from New York. Dr. Lindsley of the State Board of Health says that of the 34 cases of smallpox reported in Connecticut during the present calendar year "nearly all were imported from New York."

DISTRICT OF COLUMBIA.—278,718. The Health Officer's reports for three weeks ending June 15, 1901: Total deaths, 285; death rate, 17.72; deaths under five years, 76; from typhoid fever, 4; diphtheria, 2; diarrhœal diseases, 10; acute respiratory diseases, 11; consumption, 29; cancer, 9.

ILLINOIS.—About the river pollution: Gordon H. Nott reminds the "Inter-Ocean" in response to a recent editorial that, as a matter of fact, at present less than 25 per cent., probably not over 15 per cent., of the sewage of Chicago enters the drainage canal at all, and that before this reaches the Illinois River it has already been diluted 60 to 70 per cent. Is it strange that this already to such an extent diluted sewage, after floating 322 miles, no longer contains anything contaminating? But what when all the sewage of

Chicago, with its rapidly increasing population to three, five, and even seven millions, is forced through the drainage canal, with the Government limit of but 200,000 cubic feet per minute to carry it? Even 600,000 cubic feet per minute would be a bagatelle for such work. Instead of reaching the Illinois River diluted 60 to 70 per cent., as at present, it would not be diluted 10 per cent., and the inevitable result would be, that, with the addition of the other 75 to 85 per cent. of Chicago sewage, and only the water from the lake allowed by law and the War Department to carry it, the Illinois River must be made the vilest kind of an open sewer, especially as, from Starved Rock down, its current is so sluggish as to make it the poorest kind of an agent to purify polluted water. The outcome will be that Chicago must abandon the present fool plan, and "science, whose name should be charity, will draw a mantle over the most eggregious blunder of the century as a sewage disposal system."

INDIANA.—The number of deaths reported by the Secretary of the State Board of Health for the month of June was 2,243, making a death rate of 10.8. For the corresponding month last year, there were 2,255 deaths. Compared with the preceding month, May, there is a decrease in the number of deaths of 313, and a decrease in the death rate of 1.1. This corresponds very satisfactorily with the morbidity reports, which show a decreased sickness rate of about 10 per cent. The number of deaths under 1 year of age was 356, being 16.9 per cent. of the whole number. From 1 to 5 inclusive, there were 136 deaths, or 6.4 per cent. of the whole number, and of those who were 65 and over, there were 486 deaths, which is 22.9 per cent. of the whole number of deaths. Important causes of death were as follows:

Pulmonary consumption, 291, a rate of 141 per 100,000; typhoid fever, 22, rate 10.6; diphtheria, 15, rate 7.2; scarlet fever, 11, rate 5.3; measles, 13, rate 6.3; whooping cough, 10, rate 4.6; pneumonia, 101, rate 48.9; diarrhœal diseases, 68, rate 32.9; cerebro-spinal meningitis, 24, rate 11.6; influenza, 16, rate 7.7; cancer, 83, rate 40.2; violence, 158, rate 76.5. Pulmonary consumption and pneumonia only outrank cancer as a cause of death during the month. For the corresponding month of last year, the three diseases last mentioned stood as follows:

Consumption, rate 165.9; pneumonia, 117.2; cancer, 35.6. The comparison, therefore, shows a decrease as compared with the corresponding month last year of consumption and pneumonia,

but an increase of cancer. Diarrhœal diseases in June show a large increase over May. This is to be expected, for it is well known that such diseases increase with the hot weather, due to more rapid fermentation and bacterial growth.

Deaths from *small-pox*, 3, a very insignificant death rate, because there have been probably in the neighborhood of one thousand cases of small-pox. Even an approximate number cannot be given, because there are so many cases to which physicians have never been called, and there are many cases which physicians have failed to diagnose. Such cases, of course, escape quarantine and all record, but subsequent examinations prove they have existed.

Comparison of cities and country: The country deaths numbered 1,298, a rate of 9.4, which is 4.2 less than the city rate. The death rate from tuberculosis in cities was 158.3 in the 100,000; in the country it was 132.2. The typhoid rate was, cities, 18.7; country, 6.5. In our last Bulletin notice was called to the fact that usually the deaths from puerperal fever in the country outnumbered those in the cities ten to one. This month the tables are turned, for we find that the death rate in the cities from this cause was 8.6, while in the country it was 2.9. From cancer the death rate in the cities was 57.5, and in the country 31.4. Diarrhœal diseases show a higher rate in the cities, 57.5, than in the country, 20.4.

IOWA.—Davenport, 40,000: Report for May: Total deaths, 44; death rate, 14.97; deaths under five years, 9; from typhoid fever, 2; measles, 3; acute respiratory diseases, 2; consumption, 8; cancer, 3;

KANSAS.—The Secretary of the State Board reports for June: *Smallpox*, at 27 localities, 319 cases, with 4 deaths.

LOUISIANA.—New Orleans, 300,000—20,000 colored. Report for May: Total deaths, 581—225 colored; death rate, white, 20.34; colored, 30.00; total, 23.34; deaths under five years, 199—72 colored; from typhoid fever, 13; malarial diseases, 9; smallpox, 2; scarlet fever, 9; erysipelas, 5; croup and diphtheria, 3; diarrhœal diseases, 78; acute respiratory diseases, 45; consumption, 70; cancer, 18. Experts who have been operating the water experiment station at Audubon Park in this city announce officially that they have solved the problem of purifying the Mississippi River water by a process which renders it possible to supply ab-

solutely pure water to the people of New Orleans more cheaply than it is supplied to any city in America. The experts at the water experiment station were instructed to investigate all kinds of processes, and inventors were invited to submit plans to them. They finally brought their experiments down to four systems, two English and two American. The first is the English system of precipitation, largely used abroad, and successful with tolerably clear water, but not available for the Mississippi water. The second is a modification of the English precipitation system, except that a coagulant is used to settle the surplus sediment. The clay in the river water is very fine and almost in solution. In order to make this water fit for filtration a coagulant has to be used. It gathers the clay together as the white of an egg settles muddy coffee, and after coagulation the water settles to a point at which it can be successfully filtered. In the first system the water is run through a thick bed of sand slowly; in the other the bed of sand is much thinner and the water runs through more rapidly, reducing the expense and giving a better water. The trouble about the English filter and its modification is that the bed of sand soon becomes clogged with the sediment it collects. The third and the fourth processes are the American mechanical systems. In the third the water is allowed to settle twelve hours in its natural state, and then twelve hours with a coagulant, and it is then put through the sand filter. In the fourth system the period of settlement with the coagulant is twenty-four hours. The longer the water has to stand the greater the expense, and the experts are endeavoring therefore to reduce the time of settlement and believe that they can get it down to three hours. This is the process adopted. The result of this system of settling, coagulation and filtering is to secure water practically pure. The cost of purification is only 1.3 cents per 1,000 gallons, including interest and all other expenses. The cost of pumping the purified and filtered water into the reservoir from which it is delivered to the property owners is 1.2 cents per 1,000 gallons, making a total cost of 2.5 cents per 1,000 gallons. This at the rate of 100 gallons a day to each inhabitant will make the cost of supplying water to the people of New Orleans 90 cents a year, or $4.50 for each household; or for the entire city $270,000 a year, which is well within the resources of the Water Board. The announcement that the water problem has been solved and that the householders can hope soon to have an abundant supply of pure water for drinking, washing and sanitary purposes at a cost of less than $1 per capita,

has aroused the greatest popular interest and enthusiasm. For although surrounded on all sides by water, with the soil supersaturated and subject to overflow from the Mississippi River, Lake Ponchartain and even the rainfall, New Orleans during its two centuries of existence has never had a sufficiency of drinking water and in few cities of the country has water been so often an article of sale on the streets.

MARYLAND.—Baltimore, 541,000—78,000 colored. Report for May: Total deaths, 754; death rate, 15.57; deaths under five years, 201; from typhoid fever, 8; typhus fever, 1; scarlet fever, 1; whooping cough, 3; croup and diphtheria, 16; diarrhœal diseases, 14; acute respiratory diseases, 103; consumption, 93; cancer, 26.

MASSACHUSETTS.—Boston, 560,892. Report for the year, 1900: Total deaths, 11,678; death rate, 20.82; deaths under five years, 3,752; from typhoid fever, 143; measles, 88; scarlet fever, 181; whooping cough, 99; erysipelas, 53; croup and diphtheria, 537; diarrhœal diseases, 740; acute respiratory diseases, 1,533; consumption, 1,247; cancer, 543.

For the month of April: Total deaths, 1,002; death rate, 21.44; deaths under five years, 31; from cerebro-spinal meningitis, 6; typhoid fever, 10; smallpox, 1; measles, 13; scarlet fever, 40; whooping cough, 8; croup and diphtheria, 36; erysipelas, 7; diarrhœal diseases, 20; acute respiratory diseases, 176; consumption, 115; cancer, 29.

MICHIGAN.—The Secretary of the State Board of Health reports for the month of June, 1901, compared with the average for June in the ten years, 1891-1900, pneumonia, scarlet fever and small-pox were more than usually prevalent; and consumption, inflammation of kidney, intermittent fever, measles, erysipelas, inflammation of bowels, remittent fever, cholera morbus, dysentery and cholera infantum were less than usually prevalent.

Of the most dangerous communicable diseases, including reports by regular observers and others, cerebro-spinal meningitis was reported present in Michigan during the month of June, 1901, at 6 places; whooping cough at 30 places; diphtheria at 48 places; typhoid fever at 52 places; scarlet fever at 117 places; small-pox at 118 places; and consumption at 216 places. Reports from all sources show cerebro-spinal meningitis reported at 4 places less; whooping cough at 5 places less; diphtheria at 13 places less; ty-

phoid fever at 18 places less; measles at 4 places less; scarlet fever at 40 places less; small-pox at 35 places less, and consumption at 15 places less in the month of June, 1901, than in the preceding month.

Smallpox.—From the first of January to July 17, 1901, outbreaks of small-pox in 250 localities in Michigan have been caused to cease; and in 155, or 62 per cent. of those outbreaks, *the disease was restricted to the one household where the first case occurred.* Notwithstanding this record of effective work by the health services, State and local, the disease continued to spread, because in the other outbreaks where the disease was not restricted to the first household, it was first called "Cuban itch," "cedar itch," chicken-pox, or acne, and not reported to the health officer so that restrictive measures could be taken. Because of such lack of proper reports, small-pox continued to spread. It is now present in 57 places in Michigan, 8 places less than in the preceding week.

The number of deaths returned to the Secretary of State for the month of June was 2,458, corresponding to a death rate of 12.5 per thousand population, 327 less than for the preceding month, and 165 more than the number of deaths in June, 1900. Deaths of infants under one year of age, 420; from one to four, inclusive, 143, and 642 deaths of persons aged 65 years and over. Deaths from pulmonary tuberculosis, 169; other forms of tuberculosis, 28; typhoid fever, 22; diphtheria and croup, 15; scarlet fever, 17; measles, 12; whooping cough, 9; small-pox, 6; pneumonia, 143; diarrhœal diseases of children under two years of age, 103; meningitis, 41; influenza, 32; cancer, 106; accidents and violence, 198.

MINNESOTA.—Minneapolis, 202,718. Report for the year 1900: Total deaths, 2,289; death rate, 11.31; deaths under five years, 668; from cerebro-spinal meningitis, 18; typhoid fever, 6; malarial diseases, 2; smallpox, 10; scarlet fever, 14; measles, 2; whooping cough, 5; erysipelas, 8; diarrhœal diseases, 69; croup and diphtheria, 113; acute respiratory diseases, 249; consumption, 240; cancer, 120.

For the month of May: Total deaths, 188; death rate, 8.77; deaths under five years, 51; from typhoid fever, 10; scarlet fever, 3; measles, 4; whooping cough, 1; croup and diphtheria, 22; diarrhœal diseases, 5; acute respiratory diseases, 20; consumption, 20; cancer, 11.

St. Paul, 165,000. Report for May: Total deaths, 119; death rate, 8.65; deaths under five years, 26; from typhoid fever, 2; smallpox, 1; scarlet fever, 1; measles, 3; erysipelas, 2; diarrhœal diseases, 4; acute respiratory diseases, 9; consumption, 18; cancer, 14.

Report of the State Board of Health for the fortnight ending July 1: *Smallpox*, 527 new cases—63 less than in the preceding two weeks. Two deaths are reported, as compared with four deaths in the preceding fortnight. New cases are reported from 107 communities, located in 57 counties.

MISSOURI.—St. Louis, 575,200. Report for May: Total deaths, 862—199 under five years; death rate 17.88; deaths from zymotic diseases, 103; diphtheria, 33; typhoid fever, 8; measles, 9; scarlet fever, 5; smallpox, 2; phthisis and tuberculosis, 97; bronchitis, 29; pneumonia, 84; diseases of the circulatory system, 71; cancer, 33.

NEW JERSEY.—Newark, 250,000. Report for three weeks ending June 15, 1901: Total deaths, 105; death rate, 14.9; deaths under five years, 54; from typhoid fever, 4; scarlet fever, 1; measles, 3; whooping cough, 2; croup and diphtheria, 2; acute respiratory diseases, 14; consumption, 34.

Hudson County (Jersey City and vicinity), 386,048. Report for May: Total deaths, 547; death rate, 17.0; deaths under five years, 170; from typhoid fever, 3; malarial fever, 2; smallpox, 3; scarlet fever, 9; measles, 3; croup and diphtheria, 18; acute respiratory diseases, 88; consumption, 69.

Paterson, 105,171. Report for May: Total deaths, 123; death rate, 13.76; deaths under five years, 37; from typhoid fever, 1; malarial fever, 1; scarlet fever, 1; croup and diphtheria, 1; diarrhœa, 3; acute respiratory diseases, 19; consumption, 14; cancer, 5.

NORTH CAROLINA.—The State Board of Health Bulletin reports for May: Total deaths in 24 towns, with an aggregate population of 118,000 (45,752 colored), 202, of which 99 were colored, and 71 under five years of age; the death rates were white, 16.9; colored, 26.0; total, 20.4; from typhoid fever, 1; malarial fever, 7; whooping cough, 4; measles, 1; pneumonia, 22; consumption, 12; brain diseases, 8; heart diseases, 17; neurotic diseases, 5; diarrhœal diseases, 29; all other diseases, 91; violence, 5.

OHIO.—The State Board Bulletin states that there have been reported in the State from January 1 to June 1, 2,907 cases of *smallpox,* in 197 places, with 32 deaths. During the nine weeks ending June 1 of other infectious diseases reported there were of diphtheria and croup, 298 cases, with 41 deaths; scarlet fever, 541 cases, 22 deaths; typhoid fever, 330 cases, 74 deaths; whooping cough, 76 cases, 10 deaths; measles, 2,056 cases, 10 deaths.

Cleveland, 395,000. Report for the year 1900: Total deaths, 6,104; death rate, 15.45; deaths under five years, 2,343; from cerebro-spinal fever, 5; typhoid fever, 205; smallpox, 16; scarlet fever, 29; measles, 8; croup and diphtheria, 184; diarrhœal diseases, 428; acute respiratory diseases, 850; consumption, 482; cancer, 124.

Report for the month of May: Total deaths, 533; death rate, 15.45; deaths under five years, 166; from typhoid fever, 11; smallpox, 3; scarlet fever, 9; measles, 2; croup and diphtheria, 8; diarrhœal diseases, 15; acute respiratory diseases, 85; consumption, 53; cancer, 23.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for two weeks ending June 8, 1901: Total deaths, 782; deaths under five years, 205; from cerebro-spinal meningitis, 1; typhoid fever, 26; smallpox, 1; scarlet fever, 9; malarial fever, 2; measles, 4; whooping cough, 11; erysipelas, 3; croup and diphtheria, 16; diarrhœal diseases, 1; acute respiratory diseases, 95; consumption, 111; cancer, 24.

Pittsburgh, 332,000. Report for five weeks ending June 29: Total deaths, 587; death rate, 18.3; deaths under five years, 254; from cerebro-spinal meningitis, 1; typhoid fever, 29; scarlet fever, 18; measles, 13; whooping cough, 10; erysipelas, 4; croup and diphtheria, 9; diarrhœal diseases, 82; acute respiratory diseases, 47; consumption, 33; cancer, 17.

Of Smallpox, since the close of the Spanish-American War there have been more than 2,000 cases in the State, with but fifteen deaths. These figures are taken as an indication that the disease has been of a mild type, such as that prevailing in the West Indies and other points frequented by the soldiers. Dr. Lee is quoted as saying that "the spread of the disease from Florida up along the coast is as plainly marked as the tracks of a rabbit in the snow."

UTAH.—Salt Lake City, 70,000. Report for May: Total deaths, 51; death rate, 7.28; deaths under five years, 4; from scar-

let fever, 1; smallpox, 1; acute respiratory diseases, 6; consumption, 4; cancer, 3.

WASHINGTON.—Seattle, 90,000. Report for May: Total deaths, 74; death rate, 9.86; deaths under five years, 18; from whooping cough, 1; acute respiratory diseases, 8; consumption, 9; cancer, 3.

WISCONSIN.—Milwaukee, 295,000. Report for May: Total deaths, 294; death rate, 11.76; deaths under five years, 69; from typhoid fever, 8; measles, 2; whooping cough, 1; diphtheria and croup, 8; diarrhœal diseases, 4; acute respiratory diseases, 39; consumption, 46; cancer, 14.

PORTO RICO.—The death rate in Porto Rico, according to the Spanish records ("Porto Rico; Its Climate and Its Diseases," C. H. Alden, M. D., U. S. A., retired, late Assistant Surgeon-General, "New York Medical Journal," July 6), for the eleven years from 1888 to 1898, was a little over 30 in a thousand. It is known that these records are imperfect, and it is believed that the true death rate was considerably greater. In 1899 the death rate was 41.5 in a thousand, being higher than for several years, owing to the deaths from injury and disease due to the hurricane of that year. The mortality among infants is, of course, great. Recent reports show that in the month of July, 1900, there were 1,753 deaths of children under five years of age, out of 4,690 total deaths.

The highest death rate is from anæmia, or "tropical chlorosis," as it has been called. For the ten years beginning 1890 there was a yearly average of 4,513 deaths from this cause out of a yearly average of 27,915 total deaths. In 1899, the year of the hurricane, there were 8,977 deaths from anæmia, out of 39,918 total deaths, a rate of 22.5 per cent.

Of malarial fevers, covering an extended period, Colonel Hoff states that reports made to the Superior Board of Health for the seven months ending April 30, 1900, give 1,514 deaths from these fevers during that period, being 6.32 per cent. of the total deaths, but intimates that the diagnosis was probably incorrect in many cases. The quartan and tertian organisms were found chiefly in the cases examined, the æstivo-autumnal rarely. The troops from the United States suffered severely. In 1898 the admission rate for malarial fever was 772 in 1,000, and the death rate 3.86. The

admission rate fell in 1899 to 458, with no deaths. Malarial fevers are much less prevalent in Porto Rico than in Cuba, but chronic malarial infection is believed to be an important factor in lowering the vitality and stamina of its people.

Yellow fever is not endemic in Porto Rico, though cases have been reported annually for some years. In 1895 it was almost epidemic and caused 360 deaths. The number of deaths fell in 1897 to nine, and in 1899 there were no cases, due no doubt to the careful quarantine of our authorities, for there were numerous cases in Cuba in that year.

Typhoid fever gives, for the ten years beginning with 1890, an average of 383 deaths annually, or 1.43 per cent. of the total deaths, with very little annual variation. It is said to have been specially prevalent in the city of San Juan. In 1898 there were numerous cases of typhoid fever among the United States troops, who brought the disease with them from the infected camps they had occupied in this country. From July to December of that year there were among our troops in Porto Rico 464 cases and 44 deaths, representing an admission rate of 295, and a death rate of 34.6 in a thousand.

CUBA.—Havana, 255,555. The chief sanitary officer reports for the month of May, 1901, total number of deaths, 517; death rate, 24.27; considerably less than for any May since 1889, with the exception of May, 1900; the average number of deaths for these years being 735.81, rate, 35.82. Last month we had 565 deaths; death rate, 26.64; over which this month shows a considerable improvement.

This rate compares very favorably with our neighbors in this part of the world, Kingston, Jamaica, for the month of April, with a population of 46,542, having 134 deaths, giving a rate of 34.44 per thousand; Tampico, Mexico, with a population of 17,279, for the month of March had 64 deaths, giving a rate of 45.83; City of Mexico, Mexico, for the week ending April 7, with a population of 331,781, had 570 deaths, giving a rate of 88.40 per thousand.

We commence June with the city free from yellow fever, no cases being on hand. This is probably the first time Havana has ever entered June free from yellow fever. April and May also commenced in the same way.

Our last case of yellow fever occurred May 7. Since the

1st of March, we have only had one death from yellow fever, which occurred March 13. In no other year have the conditions, as to yellow fever, even approximated this.

Since March 8, outbreaks of yellow fever have occurred twice. The first time, April 21 and 22, we had two cases; and again on May 6 and 7, four cases. Each time the infected houses and three or four contiguous houses on every side of the infected house were carefully gone over. Every room in each of these houses was closed and sealed, and insect powder burned in them at the rate of 1 pound to 1,000 cubic feet. All standing water was drained away, where possible, and oiled where it could not be drained. The results look as if the focus of infection, at that particular point, had been eradicated. In the case of the patient taken sick March 8 after our disinfection, we went 42 days till the next case. Then an outbreak occurred, April 21 and 22. We again disinfected, and went 15 days till the next cases, May 6 and 7. We again disinfected; and have gone 24 days without a case. I am more particularly impressed by these figures, as we commenced our systematic destruction about the middle of February. Formerly we paid no particular attention to the mosquito, merely disinfecting for yellow fever as we do for other infectious diseases. The only part of the process that killed the mosquito was the formaline used in one or two infected rooms.

Our report shows a most excellent condition of the city, as far as other infectious diseases are concerned. There has been no small-pox since last July.

The amount of sanitary work done continues large; but most of our attention now is being paid to the destruction of mosquitoes. The suburbs, and all the small streams in the suburbs, have been pretty thoroughly cleaned out, and pools oiled and drained. The Mayor has issued an order prohibiting the keeping of standing water anywhere within the city limits unless made mosquito-proof. This is being enforced, and all standing water found not protected as required is emptied, and the owner fined.

Compulsory vaccination throughout Cuba has been decreed. It orders that within four months from August, 1901, all persons who have never been successfully vaccinated must be vaccinated, and that all children shall be vaccinated before they are one year old. Physicians are to be appointed to vaccinate the people under the superintendence of a permanent vaccination commission.

CITY OF MEXICO, 368,777.—Bulletin of mortality for March, 1901: Deaths from all causes, 2,092; from miscellaneous causes (enfermadades generales) 504; from *typhus fever*, 129; pulmonary tuberculosis, 123; bronchitis, 224; pneumonia, 203; broncho pneumonia, 78; grippe, 62; other diseases of the respiratory organs (enfermedades del sparato respiratoris) 639; diseases of the digestive apparatus, 520; meningitis, 43; diseases of the nervous system and organs of sense, 125; heart disease, 59; other diseases of the circulatory apparatus, 79; from other causes, 3 to 39, 227. Death rate per 1,000 for the month, 5.64.

BUENOS AYRES, 827,995. Report for the month of March: Total deaths, 1,197; from typhoid fever, 23; smallpox, 76; scarlet fever, 52; measles, 4; whooping cough, 3; diphtheria and croup, 21; pest, 2; consumption, 100; acute respiratory diseases, 127; diarrhœal diseases, 124; cancer, 53.

Buenos Ayres has adopted the international classification of causes of death in her reports.

ABSTRACT OF MORTALITY REPORTED ABROAD FOR THE FIRST QUARTER, 1901.

☞Abbreviation: tm—total mortality; dr—death rate per 1,000 of population, per annum; v—variola (small-pox); m—measles; s—scarlet fever; tf—typhoid fever; d—diphtheria; w—whooping-cough; dd—diarrhœal diseases; bp—bronchitis and pneumonia; pc—pulmonary consumption. Observe that, with few exceptions, bp and pc, in England, are not reported.

London, 4,651,113; tm, 21,647; dr, 19.5; m, 34; s, 71; tf, 146; d, 325; w, 594; dd, 392; bp, 4,764; pc, 212.

Glasgow, 753,766; tm, 4,571; dr, 24.2; v, 167; m, 21; s, 32; tf, 53; d, 37; w, 362; dd, 106; bp, 1,004.

Liverpool, 635,348; tm, 4,120; dr, 26.0; m, 269; s, 35; tf, 25; d, 55; w, 47; dd, 37.

Manchester, 553,677; tm, 3,075; dr, 22.1; m, 20; s, 26; tf, 23; d, 37; w, 71; dd, 41.

Birmingham, 524,307; tm, 2,736; dr, 20.8; m, 50; s, 19; tf, 39; d, 28; w, 60; dd, 24.

Leeds, 438,864; tm, 2,100; dr, 19.1; m, 62; s, 22; tf, 15; d, 52; w, 19; dd, 9.

Sheffield, 370,737; tm, 1,879; dr, 20.3; m, 5; s, 17; tf, 15; d, 19; d, 94; w, 53; dd, 11.

Belfast, 359,000; tm, 2,188; dr, 24.3; m, 45; s, 2; tf, 55; d, 13; w, 44; dd, 25; bp, 618; pc, 298.

Dublin, 346,428; tm, 2,920; dr, 33.6; v, 5; m, 14; s, 18; tf, 38; d, 22; w, 108; dd, 229; bp, 193; pc, 308.

West Ham, 329,377; tm, 1,125; dr, 13.7; m, 4; s, 6; tf, 20; d, 41; w, 40; dd, 11.

Bristol, 329,086; tm, 1,635; dr, 19.8; m, 27; s, 7; tf, 6; d, 47; w, 108; dd, 16.

Edinburgh, 309,472; tm, 1,702; dr, 22.0; m, 104; s, 5; tf, 13; d, 39; w, 62; dd, 23; bp, 302; pc, 153.

Bradford, 294,472; tm, 1,194; dr, 16.2; m, 41; s, 13; tf, 12; w, 7; d, 64; dd, 9.

Nottingham, 246,013; tm, 1,189; dr, 19.3; m, 20; s, 7; tf, 17; d, 12; w, 66; dd, 17.

Hull, 243,287; tm, 1,205; dr, 19.8; m, 55; s, 8; tf, 16; d, 5; w, 36; dd, 8.

Newcastle, 240,258; tm, 1,176; dr, 19.5; v, 1; m, 25; s, 8; tf, 4; d, 11; w, 11; dd, 5.

Salford, 233,418; tm, 1,235; dr, 22.1; m, 10; s, 34; tf, 19; d, 49; w, 34; dd, 16.

Leicester, 224,619; tm, 862; dr, 15.3; s, 2; tf, 5; d, 62; w, 9; dd, 5.

Portsmouth, 199,262; tm, 858; dr, 17.2; m, 23; s, 2; tf, 6; d, 20; w, 6; dd, 2.

Cardiff, 203,050; tm, 806; dr, 15.9; v, 1; s, 6; tf, 4; d, 13; w, 43.

Bolton, 166,284; tm, 735; dr, 17.6; m, 33; s, 2; tf, 7; d, 5; w, 3; dd, 13.

Brighton, 125,077; tm, 549; dr, 17.6; m, 2; tf, 1; d, 14; w, 5; dd, 6.

Sunderland, 149,205; tm, 495; dr, 13.3; s, 1; tf, 2; d, 4; w, 7; dd, 1.

Norwich, 116,466; tm, 615; dr, 21.1; m, 4; tf, 4; d, 11; w, 2; dd, 3.

Halifax, 106,873; tm, 792; dr, 29.6; m, 16; s, 16; tf, 3; d, 4; w, 30; dd, 4.

Plymouth, 103,708; tm, 647; dr, 25.0; tf, 5; d, 2; w, 15; dd, 5.

Brussels, 570,844; tm, 2,513; dr, 17.6; m, 12; s, 6; tf, 20; d, 17; w, 9; dd, 82; bp, 330; pc, 167.

Amsterdam, 520,800; tm, 2,291; dr, 17.6; m, 38; s, 2; tf, 8; d, 18; w, 47; dd, 129; bp, 235; pc, 266.

Rotterdam, 320,991; tm, 1,613; dr, 20.2; m, 42; s, 5; tf, 14; d, 15; w, 28.

The Hague, 205,328; tm, 940; dr, 18.3; m, 1; tf, 4; d, 8; w, 15.

Paris, 2,511,629; tm, 13,853; dr, 22.2; v, 111; m, 106; s, 33; tf, 78; d, 165; w, 77; dd, 315; pb, 2,527; pc, 2,904.

Lyons, 466,028; tm, 2,740; dr, 26.3; m,5; s, 2; tf, 14; d, 40; w, 14; dd, 40; bp, 648; pc, 346.

Lille, 222,779; tm, 1,198; dr, 21.4; v, 1; m, 12; s, 4; tf, 2; d, 13; w, 12; dd, 127; bp, 216; pc, 191.

St. Etienne, 135,784; tm, 799; dr, 23.5; s, 1; tf, 9; w, 2; d, 11; dd, 17; bp, 177; pc, 123.

Roubaix, 124,447; tm, 617; dr, 19.8; v, 1; m, 2; s, 1; tf, 3; d, 7; w, 3; dd, 62; bp, 118; pc, 87.

Havre, 119,470; tm, 940; dr, 18.3; m, 1; tf, 4; d, 8; w, 15.

Nice, 108,227; tm, 722; dr, 26.6; tm, 1; s, 2; tf, 6; d, 9; w, 2; dd, 19; bp, 163; pc, 78.

Rheims, 107,963; tm, 566; dr, 20.9; m, 24; tf, 11; d, 3; w, 1; dd, 31; bp, 115; pc, 63.

Nancy, 100,094; tm, 661; dr, 26.4; v, 3; m, 5; s, 9; tf, 2; d, 2; w, 3; dd, 31; bp, 140; pc, 82.

Berlin, 1,908,500; tm, 8,345; dr, 17.5; m, 158; s, 118; tf, 22; d, 156; w, 156; dd, 505; bp, 957; pc, 1,219.

Hamburg, 705,738; tm, 3,164; dr, 18.0; m, 9; s, 31; tf, 6; d, 27; w, 37; dd, 99; bp, 556; pc, 359.

Munich, 508,445; tm, 3,055; dr, 24.1; m, 65; s, 3; tf, 2; d, 28; w, 44; dd, 247; bp, 309; pc, 377.

Leipzig, 461,520; tm, 2,009; dr, 17.5; m, 24; s, 18; tf, 2; d, 25; dd, 140; bp, 309; pc, 221.

Breslau, 427,505; tm, 2,653; dr, 24.7; m, 3; s, 6; tf, 8; d, 15; w, 10; dd, 222; bp, 357; pc, 435.

Dresden, 400,140; tm, 1,813; dr, 18.1; m, 7; s, 3; tf, 2; d, 22; w, 26; dd, 95; bp, 264; pc, 228.

Cologne, 371,000; tm, 1,938; dr, 20.9; m, 46; s, 5; tf, 2; d, 23; w, 55; dd, 464; bp, 237; pc, 235.

Frankfort-on-the M., 292,739; tm, 1,174; dr, 16.1; m, 10; s, 4; tf, 2; d, 9; dd, 29; bp, 200; pc, 203.

Hanover, 237,955; tm, 926; dr, 15.6; m, 2; s, 1; tf, 1; d, 14; dd, 20; bp, 173; pc, 227.

Magdeburg, 231,518; tm, 1,055; dr, 18.1; m, 9; s, 22; d, 34; dd, 42; bp, 116; pc, 110.

Nuremberg, 268,321; tm, 1,460; dr, 21.7; m, 15; s, 11; d, 17; dd, 76; bp, 328; pc, 206.

Dusseldorf, 217,575; tm, 916; dr, 16.8; s, 5; tf, 3; d, 16; dd, 28; bp, 155; pc, 96.

Charlotteburg, 195,870; tm, 653; dr, 12.5; m, 5; s, 4; d, 2; dd, 34; bp, 133; pc, 57.

Chemnitz, 209,636; tm, 1,225; dr, 23.4; m, 8; s, 5; tf, 2; d, 9; dd, 41; bp, 88; pc, 114.

Stettin, 213,757; tm, 1,140; dr, 21.3; m, 4; s, 4; tf, 10; d, 24; dd, 52; bp, 165; pc, 111.

Stuttgart, 157,172; tm, 257; dr, 18.4; m, 50; s, 5; tf, 1; d, 26; dd, 22; bp, 123; pc, 75.

Altona, 162,278; tm, 764; dr, 18.8; s, 8; tf, 1; d, 3; dd, 32; bp, 128; pc, 83.

Bremen, 165,929; tm, 731; dr, 17.6; m, 6; s, 21; tf, 3; d, 3; dd, 211; bp, 128; pc, 91.

Koenigsberg, 188,865; tm, 731; dr, 17.6; m, 6; s, 21; tf, 3; d, 3; dd, 21; bp, 128; pc, 91.

Strasburg, 151,978; tm, 827; dr, 21.7; m, 22; s, 4; tf, 23; dd, 59; bp, 175; pc, 96.

Dortmund, 146,556; tm, 713; dr, 19.5; s, 12; tf, 10; d, 19; dd, 26; bp, 186; pc, 52.

Dantzig, 139,567; tm, 819; dr, 23.5; m, 1; s, 10; tf, 1; d, 14; dd, 38; bp, 124; pc, 71.

Halle, 158,806; tm, 769; dr, 19.4; m, 11; s, 20; tf, 1; d, 16; dd, 31; bp, 120; pc, 74.

Brunswick, 127,325; tm, 618; dr, 19.4; m, 1; d, 7; dd, 29; bp, 130; pc, 77.

Essen, 121,418; tm, 678; dr, 22.3; s, 67; tf, 4; d, 15; dd, 37; bp, 173; pc, 94.

Crefeld, 106,844; tm, 421; dr, 15.7; m, 6; s, 3; d, 8; dd, 12; bp, 79; pc, 42.

Posen, 118,222; tm, 714; dr, 24.1; m, 35; s, 3; tf, 2; d, 9; dd, 11; bp, 131; pc, 82.

Kiel, 109,568; tm, 522; dr, 19.0; m, 8; s, 4; tf, 4; d, 8; dd, 34; bp, 105; pc, 59.

Kassel, 107,235; tm, 497; dr, 18.5; m, 14; s, 23; tf, 3; d, 9; dd, 9; bp, 66; pc, 58.

Bale, 109,169; tm, 479; dr, 17.5; m, 9; s, 1; d, 6; w, 6; dd, 39; bp, 44; pc, 61.

Geneva, 104,044; tm, 533; dr, 20.5; m, 7; s, 1; tf, 2; d, 5; dd, 11; bp, 69; pc, 87.

Zurich, 150,228; tm, 669; dr, 17.8; m, 3; s, 3; tf, 1; d, 5; w, 20; dd, 40; bp, 86; pc, 92.

Vienna, 1,662,269; tm, 9,898; dr, 23.7; v, 1; m, 333; s, 82; tf, 12; d, 129; w, 35; dd, 413; bp, 1,871; pc, 1,747.

Buda-Pesth, 687,729; tm, 4,054; dr, 23.5; m, 102; s, 60; tf, 12; d, 41; w, 25; dd, 138; bp, 754; pc, 750.

Prague, 393,091; tm, 2,045; dr, 20.9; m, 35; tf, 11; d, 23; w, 28; w, 5; dd, 66; bp, 251; pc, 398.

Trieste, 168,951; tm, 1,440; dr, 34.1; m, 9; s, 5; tf, 9; d, 16; w, 14; dd, 260; bp, 342; pc, 213.

Lemberg, 143,873; tm, 1,059; dr, 29.4; s, 2; tf, 10; d, 2; w, 3; bp, 148; pc, 285.

Brunn, 105,958; tm, 829; dr, 31.2; m, 14; s, 2; tf, 5; d, 13; w, 2; bp. 130; pc, 176.

Cracow, 85,443; tm, 756; dr, 35.4; s, 10; tf, 13; d, 20; dd, 34; bp, 117; pc, 169.

Pilsen, 69,109; tm, 337; dr, 19.5; s, 1; tf, 3; bp, 26; pc, 57.

Lintz, 53,752; tm, 302; dr, 37.3; m, 3; tf, 3; d, 12; dd, 1; bp, 37; pc, 124.

Copenhagen, 354,000; tm, 1,806; dr, 20.4; m, 57; s, 9; tf, 8; d, 19; w, 20; dd, 54; bp, 285; pc, 230.

Stockholm, 297,148; tm, 1,453; dr, 19.6; m, 11; s, 18; tf, 2; d, 56; w, 4; dd, 70; bp, 302; pc, 225.

Gothenburg, 129,000; tm, 527; dr, 14.2; s, 2; tf, 1; d, 2; w, 22; dd, 19; bp, 62; pc, 29.

Christiania, 226,423; tm, 997; dr, 17.6; m, 6; s, 5; tf, 1; d, 4; w, 14; dd, 38; bp, 210; pc, 178.

St. Petersburg, 1,248,643; tm, 7,996; dr, 25.6; v, 136; m, 95; s, 206; tf, 214; d, 343; w, 55; dd, 652; bp, 310; pc, 1,210.

Moscow, 1,023,817; tm, 7,126; dr, 27.8; v, 16; m, 79; s, 137; tf, 33; d, 141; w, 19; dd, 559; bp, 200; pc, 928.

Odessa, 434,600; tm, 2,420; dr, 22.3; v, 49; m, 35; s, 43; tf, 30; d, 23; w, 2; dd, 17; pc, 317.

For the Fourth Quarter, 1900:

Bordeaux, 206,906; tm, 1,264; dr, 13.4; m, 7; s, 2; tf, 12; d, 4; w, 2; dd, 57; bp, 101; pc, 143.

Nantes, 125,757; tm, 614; dr, 19.[illegible]tf, 17; d, 2; w, 1; dd, 38; bp, 56; pc, 118.

Barmen, 136,968; tm, 1,127; dr, 16.8; m, 15; s, 15; tf, 8; d, 7; dd, 91; bp, 89; pc, 69.

Aix-la-Chapelle, 134,196; tm, 1,075; dr, 17.1; tf, 3; d, 19; dd, 50; bp, 92; pc, 52.

Mannheim, 118,243; tm, 1,090; dr, 17.2; m, 14; s, 1; tf, 11; d, 12; dd, 53; bp, 59; pc, 63.

Turin, 344,203; tm, 1,357; dr, 19.7; m, 18; s, 1; tf, 15; d, 3; w, 6; dd, 80; bp, 162; pc, 162.

Genoa, 226,432; tm, 1,078; dr, 19.1; v, 6; s, 2; tf, 8; d, 4; w, 2; dd, 63; bp, 197; pc, 129.

Milan, 494,486; tm, 1,964; dr, 15.9; m, 6; s, 1; tf, 78; w, 4; d, 29; dd, 172; bp, 331; pc, 334.

Bologne, 157,162; tm, 707; dr, 20.0; m, 1; s, 3; tf, 32; d, 7; dd, 81; bp, 102; pc, 76.

Cairo, 534,677; tm, 4,197; dr, 31.5; v, 3; m, 5; tf, 89; d, 60; w, 1; dd, 694; bp, 849; pc, 330.

Alexandria, 273,563; tm, 2,366; dr, 34.5; v, 5; m, 5; tf, 32; d, 21; w, 7; dd, 597; bp, 465; pc, 148.

Damietta, 31,285; tm, 159; dr, 20.3; d, 2; dd, 32; bp, 28; pc, 3.

Port Said, 30,773; tm, 178; dr, 23.1; d, 1; dd, 32; bp, 38; pc, 13.

Suez, 19,526; tm, 178; dr, 36.4; tf, 4; w, 5; dd, 36; bp, 22; pc, 10.

Bombay, 821,764; tm, 10,728; dr, 45.3; v, 10; m, 13; *Fevers,* 2,345; *Cholera,* 101; dd, 1,100.

Calcutta, 466,460; tm, 5,084; dr, 43.7; v, 197; m, 11; *Fevers,* 1,753; d, 5; w, 4; *Cholera,* 304; dd, 693.

BUBONIC PLAGUE.

Washington, July 8.—Consul Johnson, at Amoy, China, reports the appearance of plague at that place two weeks earlier than usual last year. His statement is dated May 14. He says he has refused to permit Chinese steerage passengers to depart for Manila, and adds:

"The spread of plague during the past ten days has been rapid, and the fatalities most appalling. It is impossible to give approximately accurate data, as no statistics are kept by the officials and no amount of inquiry can result in accurate figures. It is my opinion, based upon the most reliable data from native sources, that during the week just closed there were as many as 100 deaths per day in Amoy and its suburbs. The same condition of affairs exists in surrounding cities within thirty miles of Amoy."

The representative of the Marine Hospital Service at Hongkong also reports the early appearance of the disease in that city, with a more rapid spread than usual. He says several Europeans have been attacked.

In Honolulu it has again reappeared. Major Blair D. Taylor, of the army medical department, reports that there were four deaths from bubonic plague at Honolulu from May 29 to June 9. His report says that the Honolulu Board of Health has taken every precaution to segregate the inhabitants of infected houses

and disinfect them, and the president of the board believes that he has the situation well in hand. At Hong-Kong the disease has broken out in virulent form, and every port in the Orient has quarantined against that place. A United States transport, having on board one hundred and eighty soldiers and sixteen officers, returning from the Philippines, was detained at Nagasaki on account of the death from plague of a Chinese fireman. At Hong-Kong since the first of the year seven Europeans and five hundred and forty-two natives have died of the plague. A British steamer is in quarantine at San Diego, Cal., having lost six of her crew from plague during the voyage from Hong-Kong. One death occurred before Honolulu was reached, and five between that port and San Diego. The cases were not confined to any part of the ship, various members of the crew and one steerage passenger being among those attacked. Many dead rats were found in the ship.

In the city of Bombay, India, over eleven thousand cases have been reported from December 28, 1900, to April 20, 1901, with 8,721 deaths. At Cape Town, South Africa, the disease is also still present. From February 16, 1900, to May 4, 1901, 572 cases of plague are recorded. Of these 250 died. During the week ending May 17 there were in the Presidency of Bombay 1,156 cases, with 919 deaths; in the City of Bombay, for the same period, 361 cases, with 284 deaths.

In Calcutta, November 4—May 11 (Public Health Reports), 7,027 cases, with 6,034 deaths.

In Manila, December 30—May 11, 237 cases, with 178 deaths.

CHOLERA, in Calcutta, April 28 to May 11, 173 deaths.

SMALLPOX, at most recent dates, is less prevalent abroad than in the United States.

In Paris, May 19—June 15, 59 deaths.

In Calcutta, February 1 to March 9, 175 deaths. In Madras, April 20 to May 17, 38 deaths. Buenos Ayres, month of March, 76 deaths.

BOOK REVIEWS.

SCHOOL HYGIENE. By EDWARD R. SHAW, PROFESSOR OF THE INSTITUTE OF PEDAGOGY, NEW YORK UNIVERSITY. 12mo. Pp. 268. Price, $1.25. New York: The Macmillan Company.

An admirably trenchant book on the essential conditions of healthful schoolhouses, with which all Boards of Education, schoolhouse builders and school teachers should be familiar. Health, its provision and protection, are the leading thoughts of a lucid description of the means promotive of these essential conditions of education, without which education is aimless and worthless. No competent teacher can afford to be without knowledge of these conditions, and no book with which we are acquainted describes them more clearly. It is appropriately illustrated throughout with diagrams, figures and plans, with reference to elevation, light, floor space, furniture and sittings; warming, ventilation; bathrooms, house drainage, healthful sites and surroundings, and concludes with an excellent chapter on diseases which concern the schools.

HOW TO COOK FOR THE SICK AND CONVALESCENT. ARRANGED FOR THE PHYSICIAN, TRAINED NURSE AND HOME USE. By HELENA V. SACHSE, GRADUATE OF PHILADELPHIA COOKING SCHOOL. 12mo. Pp. 250. Philadelphia: J. B. Lippincott Company.

Good cooking for the sick is alike good for the well who would keep so. It is of this kind of cooking that this book teaches, as far as it goes. It makes no pretense, however, to completeness, or it would have added to the direction for "boiled bacon," better broiled and how to broil it. But bacon is not often directed for the sick—better for the sick were it oftener—hence this omission is excusable. "Eggnog * * * one teaspoonful of brandy or table spoonful of wine" to one-half pint of milk or water and three or four tablespoonfuls of egg, sugar and cream, is not even an apology for eggnog, and the subject had been better left out altogether. For no one with knowledge of eggnog as a nutritive in rare cases would accept this substitution. Excepting these and a few other mistakes of little importance, there is a comprehensive variety of eminently suitable articles and compounds, with

generally excellent directions for their cooking, insomuch that no physician, nurse or housewife with this book in hand can be at a loss for something suitable to almost every possible requirement of food for the sick or delicacy for the well.

THE RELIGION OF SCIENCE LIBRARY, No. 29, May, 1901. THREE DIALOGUES BETWEEN HYLAS AND PHILONOUS. By GEORGE BERKELEY. Price 25 cents. Chicago: The Open Court Publishing Co.

Both authors and readers of modern psychological books would do well to read Berkeley's criticisms and conceptions almost two centuries ago, when psychology was wholly speculative, yet well nigh as definite as it is now made to appear by modern writers. Deep metaphysical thought and ingenious speculation on the subject have not been so much improved upon since his day as to contribute very marked advancement, or more entertaining reading. However, the "Design" of Hylas and Philonous, "to Demonstrate the Reality and Perfection of Human Knowledge, the Incorporeal Nature of the Soul, and the Immediate Providence of a Deity, in Opposition to Skeptics and Atheists," was so praiseworthy as to still make it commendable.

ETIDORHPA. By JOHN URI LLOYD, Author of "Stringtown on the Pike." 12mo., pp. 380. Illustrated. New York: Dodd, Mead & Co.

"Etidorhpa, or The End of Earth"—imagination let loose, and begins the search for the end of the earth by descending into the greatest of Kentucky's great caves and navigating the whole interior of the earth, which is found to be as hollow as a gourd, illumined without sunlight, adorned with enchanting groves and forests of crytogamic vegetation. Navigable streams descending from mountains, with outlets into an oceanic expanse, all as smooth as glass—no air and therefore without ripple. Bordered with precipitous mountain peaks and water falls—falls, no; *levelings* without gravitation; no weight, no shock to matter, body or mind; airless, breathless, yet livable! How can these things be? Only as they appear in Etidorhpa: The inside of earth revealed by a lone traveler of a remarkably vivid imagination; a psychological display of much fiction with just enough truth interjected to display the romance of unnatural concepts.

CONTEMPORARY LITERATURE.

MR. CLEVELAND'S DIPLOMACY.

THE CENTURY for July contains, apropos of the conclusion in the same number of Mr. Cleveland's statement of the Venezuela boundary dispute and its settlement, the following editorial:

President Cleveland's famous Venezuelan message, sent to Congress December 17, 1895, came as a surprise, not to say as a shock, even to many who might be thought to be conversant with the situation as it had at that time developed. In two interesting papers (originally prepared as lectures) Mr. Cleveland has now set forth the whole matter with much clearness, as explicitly as it could be done in the given space, and with calm conviction.

These papers will, we believe, also come as a surprise to the general public, both of this country and of Europe—the surprise, in the present instance, being of a somewhat different kind. That there should have been such a long, and, we may add, such a troubling and exasperating, diplomatic background to the apparently sudden action on the part of our own Executive, will be in the nature of news to the popular mind.

There are those, doubtless, who will still criticise the action of our Executive in some of its details; but we think that after having read the whole of Mr. Cleveland's presentation of the case even the critics will be fain to acknowledge two things: First, that there was greatly more ground for the action than the general public has ever acquainted itself with; and, second, that aside from any question as to the Monroe Doctrine (which is a matter affecting our own "safety and welfare"), the interference of the Government of the United States in this instance not only compelled the speedy and just conclusion of an embittered controversy, and furnished a new and conspicuous object-lesson in international arbitration, but also placed a weak country on the same plane as a powerful one in the field of international dispute, and was in the high interests of justice and fair dealing among all the nations of the earth.

The stand that the United States took in its interference in behalf of a weak country as against a strong one, both in the case of Venezuela against Great Britain and in the case of Cuba against Spain, places us under peculiar obligation ourselves to respect

with the utmost scrupulousness, and throughout all time, the rights of weaker nations and unprotected peoples in their relations with our own powerful commonwealth.

It should be remembered that as a sequel to this diplomatic incident came the negotiation of a general treaty of arbitration between the United States and Great Britain—a noble measure, the blood of which is on the hands of the Senate of the United States!

OURS A SOVEREIGN NATION.

The confusion of mind that has prevailed in many quarters from the beginning seems to be due largely to the failure to grasp the nature of a written constitution and its relation to the exercise of general powers of sovereignty by a government. There is no nation in the world, and probably has never been one, in which any generation supposed that it could devise a written instrument of organic law which would effectively prevent its successors from availing themselves of opportunities that might arise to extend their territorial jurisdiction. The primary object of the American Constitution was to arrange an effective and permanent scheme of partnership and union for a group of associated States which were not suitably organized under the old Articles of Confederation. It was taken as a matter of course from the very beginning that this partnership should constitute an authority capable of acquiring and governing outside territory. If, indeed, the great expanses of territory that were acquired one after another were for the most part somewhat rapidly formed into States which in quick order were accepted as members of the partnership, this course of proceeding was not in the least due to any constitutional obligations, but solely to the fact that it accorded with the interests and inclination of the American people to follow just that line of action. In other words, the United States, quite apart from any obligations incurred by treaty, or agreements of any other sort, rested under no temptation whatever to hold the great Northwestern Territory or the lands of the Louisiana Purchase in political subjection and bondage. The gentlemen who have been using the word empire so freely as a term of reproach to the present Administration, and to the Supreme Court on account of its recent decisions, do not seem to have kept in mind the essential nature of governmental and political institutions.—From "The Progress of the World," in the "American Monthly Review of Reviews" for July.

The July number of the NORTH AMERICAN REVIEW is remarkable for the general excellence and high quality of its contents, and there are few intelligent American readers who will not find in it something to their taste. Alfred Austin, the poet-laureate of England, contributes a long poem entitled "Polyphemus," based upon the mythical tale of the tragic love of the giant Cyclops for the fair nymph, Galatea. A posthumous paper by Sir Walter Besant, entitled "The Burden of the Twentieth Century," describes the work which is likely to be done, in England especially, during the next hundred years, in perfecting social, religious and political reforms already begun. Dr. J. M. Buckley employs his pungent, polemical pen in exposing

"THE ABSURD PARADOX OF CHRISTIAN SCIENCE."

Dr. Buckley lays emphasis upon the practical absurdity in which the application of Christian Science principles involves its votaries, and he finds a conclusive argument against the Christian Science idea that medicines cure only through the patient's belief in them in the fact that the curative properties of many substances were discovered by pure accident. He thus describes the functions and office of a physician worthy of the name, as distinguished from the so-called "healers" of Christian Science:

"An intelligent, educated, experienced and candid physician studies both the mind and the body, relieves the sick man of the responsibility of treating himself, strengthens him by hope and encourages him by his personal presence and manner. He understands the mineral, plant and animal substances included in Materia Medica; he knows that not medicine, but inherited vital force, is the primary cause of health and healing, and of the repair of injuries. He knows also, by observation and experiment, that nature can be assisted, but he interferes only when it is necessary and safe. Such a physician is too learned and too honest ever to do he knows not what because he knows not what to do. He can relieve the pains of incurable diseases, smooth the pathway of sufferers to the inevitable end, and to convalescents he can give such hygienic hints as may prevent a recurrence of the malady or save them from something worse. Certain that all men must die and that all die of old age, disease, accident, or intentional violence, he claims by hygiene, medicine and surgery to assist nature to delay the inevitable, and to render the journey to it more endurable."

Frederic Harrison's "Impressions of America" are reprinted in

THE LIVING AGE for July 13, from "The Nineteenth Century." Mr. Harrison, as was to have been expected, is an amiable critic, and he is also more discriminating than many Englishmen who have discoursed upon America.

The serial in THE LIVING AGE, beginning in the number for July 13th, is Mathilde Serao's "Sister Giovanna of the Cross," translated from the Italian. It is a pathetic and exquisitely written story of a nun, forced out into the world by the closing of the establishments of the religious orders. It has a peculiar timeliness, in view of the discussion of the Associations Law in France.

THE EVOLUTION OF A THIRD EYE.

The proper angle of vision and the true perspective depend upon the point from which we look at an object. A city sky line cannot be seen from a basement window. We get a very poor picture of an avenue from an alley-corner. A masterpiece of painting may look like a mere daub if seen from an unfavorable spot. Visitors to art galleries are constantly saying, "How different the canvas appears here and there."

Life is like that. The world is something fairer after dinner. The skies are never so blue, the grass is never so green, the air never so balmy as on one's wedding day, whatever the weather may be.

A friend was bitterly complaining to the soul that loved him best. He said: "Everything is dark before me. Nothing but disaster and defeat seems likely to come." "Wait till to-morrow and see how things look," was the wise advice. And on the morrow the sun was undimmed and the future full of hope. The day brought a new viewpoint.

An optimistic Confederate officer who had been wounded, and who lay in a temporary hospital with a leg amputated, heard his black body-servant wailing, and said: "Pomp, why are you crying so?" The servant answered: "I'se cryin' case you'se only got one laig, Massa." "Then stop your foolishness," the officer replied, "and be glad you'll have but one boot to clean hereafter." A spirit such as that sees everything from the viewpoint of a practical philosophy capable of ridding life of half its sorrow.

Montaigne once said: "If I had the power of creating and endowing myself, I should make myself three-eyed." "Why a third eye?" some one inquired. He answered: "To enable me to see the cheerful side of everything." Some men have that extra vision. But it is not a separate organ, not a concrete faculty, but

merely a mental attitude, a habit of seeing things from the best possible point of view.—"The Saturday Evening Post."

HUNGER AND MENTAL ACTIVITY.

The influence of hunger on mental activity has recently been investigated by M. Lassignardie. Deprivation of nourishment may include voluntary deprivation, as in the case of professional fasters, and compulsory deprivation, as in diseases, such as violent fevers, hysteria, and acute mental derangement, or where hunger is a consequence of poverty, shipwreck, imprisonment, or accident, where hunger is continued for the commission of suicide, and finally in religious fasts. The author makes a special study of the transitory delirium that follows long deprivation, as after shipwreck. He concludes that if deprivation do not last too long, and if, especially, it is voluntary and habitual, the result is manifest activity of the mind, and particularly of the imagination. If the deprivation be protracted, a change in the character and deportment of the person takes place, which is expressed by a peculiar excitability, by extraordinary selfishness, and even by cruelty. At the same time unequivocal signs of mental derangement appear, such as partial loss of memory, of volition, of self-control, and an inclination to sudden and irresistible impulses which seem to be wholly instinctive. In serious cases the mental derangement becomes particularly acute during the night; it shows itself in sleeplessness, in horrid dreams, nightmares, illusions, maniacal visions, and dangerous impulses. If mental derangement occur during the day, also, it indicates a very serious condition that can become extremely dangerous. If deprivation last indefinitely, the victim, under the influence of continued hallucinations and irresistible impulses, can therefore be hastened to deeds such as have occasionally filled the world with horror. Lassignardie draws a parallel between the mental condition resulting from hunger and that resulting from drunkenness; in both he finds the same disturbance of the intelligence, or morale, and of deportment. Clinical as well as experimental facts have shown that many of the signs of disease correspond precisely with those of the effect of deprivation of nourishment.—"Literary Digest."

COUNT TOLSTOY AND THE RUSSIANS.

If Tolstoy has never made a Russian sect, the Russian sects have made Tolstoy. He is a pupil, not a teacher, in his own country. It is only abroad that Tolstoy stands as a revolutionary

apostle of novel moral ideas. His relation to his own countrymen is that he expresses, divested of mysticism, the practical religion which animates a large proportion of Russian sectarians, Dukhobortsi, Molokani, Stundists and Vagabonds. How far he is right in declaring that the masses of his countrymen are informed by the same spirit is another question. And even if he is right in this, is he right in regarding racial conditions as the determining factor, and not merely a low stage of culture? Either view seems to strike at the general applicability of his doctrines. If the Russian peasant is really the spiritual salt of the earth by history and race, what of the other races? If he is merely a better man because he leads a primitive life, what of his future, and what of the future of the advanced races? For Tolstoy is no dreamer, and he knows very well that the machine even of "false civilization" cannot be stopped. The answers to these questions put to Tolstoy, the practical man, are given by Tolstoy, the academic thinker, who replies that consequences matter nothing, as they mattered nothing to the preacher of asceticism in "The Kreutzer Sonata." Let each man settle with his own conscience. The rest may perish.—From "Count Tolstoy in Thought and Action," by R. E. C. Long, in the "American Monthly Review of Reviews" for July.

KEEPING TRACK OF YOUR BOOKS.

If you wish to keep a list of the books you own, says ST. NICHOLAS, it will be found an excellent plan to buy one of the small boxes of index cards that are advertised in so many magazines. This will be found much more convenient than a blank book. By writing the name of each book on a separate card, you can jot down on the card any information concerning the book. Thus, when it is lent, write lightly in pencil the name and address of the borrower, and the date. If the book contains anything to which you may wish to refer, it is an easy matter to make a note of the page on the card. If the book is given away, lost, or sold, the card can be taken out of the box and filed elsewhere or destroyed. These index cards may be classified according to subjects, in alphabetical order, or in any way you please, whereas the blank book system is not changeable. By the cards you may always know just where every book is. The time to begin the use of any system is when one is young, and before the library grows. Your librarian will be glad to tell you the best ways of using a card system.

EXPOSITION OF HYGIENE, MARITIME SECURITY, AND FISHERY AT OSTENDE.

The Department of State has received a note from the Belgian Embassy, dated Washington, May 21, 1901, requesting the participation by the Government and the people of the United States in the international exposition of hygiene, maritime security, and fishery to be held at Ostende, Belgium, during August and September next. An international congress will be organized in connection with the exposition for the discussion of questions of maritime hygiene and maritime and colonial security.

The object of the exposition is to make known the measures adopted by different governments for the organization and working service of succor on battlefields, and in cases of great catastrophes on sea or land—as the use and working of life-saving apparatus, etc.

Demands for admission should be addressed, not later than August 1, to the committee of organization at 18 rue des Sœurs Blanches, Ostende, Belgium.

The price for sites will be as follows:

Isolated sites, 40 francs ($7.72) per square meter (1.196 square yards); sites not isolated, 25 francs ($4.83) per square meter—payable within fifteen days after receipt of the certificate of admission.

Expenses of unpacking, installing, repacking, etc., will be charged to exhibitors. Articles exhibited may be sold, but not removed, before the close of the exposition.

The exposition will be divided into three divisions:

DIVISION I.—HYGIENE.

SECTION 1. *Applications for physical and natural science to the hygiene of seamen and of the inhabitants of the coast.*—Apparatus for the study of maritime phenomena; registers of tides, apparatus for collecting and transmitting tidal forces, for exploring the depths of the sea; means for putting beaches in order, for the maintenance of downs; instruments for studying the physical and chemical properties of water and of air; barometers, hydrometers, thermometers, electrometers, microscopes, etc.; collections referring to seacoast or marine flora, to maritime fauna, etc.; herbariums, plants, or animals, preserved or imitated; artificial anatomy, etc.

SECTION 2. *Applications of civil or maritime engineering.*—Plans and rough drafts of halls, slaughterhouses, fish markets, etc., for bathing resorts; management and improvement of ports; types of houses, villas, etc.; special materials for maritime buildings, glazes impervious to water, etc.; lavatories, public and private bath houses, water-closets, means of ventilation, heating, lighting; plans for furnishing maritime localities and boats with potable water; special pumps (Norton and others), distilling apparatus, aqueducts; distribution of water, artesian wells, etc.; removal and utilization of refuse—ashes, filth, night soil.

SEC. 3. *Application of medical science.*—Ambulances, marine hospitals; installations to prevent the introduction of contagious diseases by sea; hygiene of naval transports; disinfection of premises, of boats, of residue of every kind; destruction of parasites; special pharmacies, medicine cases, articles for dressing wounds; remedies for seasickness; natural and artificial mineral waters; artificial foods; peptones, meat powders, etc.

SEC. 4. *Applications for bromatology and the domestic arts.*—Food in general; apparatus for the preparation of food in houses and on board vessels; ovens for baking bread and sea biscuit; special foods for children, nursing bottles, condensed and sterilized milk, lacteal flours; installations for the preparation of preserved foods by every process; refrigerating apparatus; installations or apparatus for the preparation and the preservation of alcoholic drinks, milk, wines, liquors, etc.; extracts, coffee, tea, mate, chocolate, etc.; process and products for destroying injurious animals, etc.; dress for sailors and fishermen, hats, helmets, waterproof boots and shoes or those with insulating soles, fishing and hunting boots, waterproofs, etc.; gymnastics, shooting galleries, fencing, etc.; models of tents, shelters, bath houses, urinaries, etc.; luminous and glazed papers, bedding, and hangings.

SEC. 5. Publications relating to hygiene.

DIVISION II.—SECURITY.

SEC. 6. *Coast and maritime security.*—Lazar houses, Red Cross, light-house signals, luminous signals, sirens, equipment and dress for salvors, apparatus for salvage, cork jackets, life buoys, safety dress, fires, explosions, saving ports, transports for wounded and shipwrecked.

SEC. 7. *Colonial hygiene and security.*—Colonial food products, models of houses, means of transport, dismountable steamers;

means of destruction of injurious animals; fabrics and clothing for colonists; charitable establishments, hospitals, intellectual and moral development of the colored races.

DIVISION III.—FISHERY.

SEC. 8. *Fishing and the physical, intellectual, or moral development of fishermen and sailors.*—Auxiliary sciences of fishing; collections of animals useful or injurious to fishers; alive, preserved, or artificial; destroyers of the products of fisheries; zoophytes; sponges and corals; asteroids (starfish), sea urchins; worms; arthropodes, crustaceans; shrimps, lobsters, sea crayfish, etc.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

TWENTY-SEVENTH ANNUAL MEETING.

It is announced that the dates of the next meeting of the Mississippi Valley Medical Association have been changed from the 10th, 11th and 12th of September to the 12th, 13th and 14th of September. This change has been made necessary because the dates first selected conflicted with another large association meeting at the same place.

The meeting is to be held at the Hotel Victory, Put-in-Bay Island, Lake Erie, O., and the low rate of one cent a mile for the round trip will be in effect for the meeting. Tickets will be on sale as late as September 12, good returning without extension until September 15. By depositing tickets with the Joint Agent at Cleveland and paying 50 cents the date can be extended until October 8. This gives members an opportunity of visiting the Pan-American Exposition at Buffalo, to which very low rates by rail and water will be in effect from Cleveland.

Full information as to rates can be obtained by addressing the Secretary, Dr. Henry E. Tuley, No. 111 West Kentucky Street, Louisville, Ky. Members of the profession are cordially invited to attend this meeting.

Those desiring to read papers should notify the Secretary at an early date.

THE SANITARIAN.

SEPTEMBER, 1901.

NUMBER 382.

SOME PHASES OF RIVER POLLUTION.

By HARVEY B. BASHORE, M. D.

Ages ago, when primeval forests lined the banks of our streams and human beings were so few and far between that there was hardly one person to a square mile, there was no such thing as river pollution. Then it was safe to drink from any stream you happened to meet; but civilization has wrought a great change, so that there exists to-day, in the inhabited parts of the country, scarcely a stream that is not polluted with sewage in one form or another.

In reviewing this subject it is apparent that the amount of sewage poured into a stream does not necessarily represent the pollution at any given time, but that there are other factors, such as dilution, floods, self-purification, etc., which have to be taken into consideration.

For one year monthly records of the river pollution (as shown by excess of chlorine) at Harrisburg have been kept, and it is interesting to note the relation this bears to the floods and fluctuations of the stream, records of which were also taken at the same time.

The normal chlorine of the Susquehanna at this point must be somewhat below 0.1 per 100,000, for this is about the normal for pure water at this place, and the sources of the river and many of its branches come from a region yet lower. Last July (1900), when the observations were begun, the city tap water yielded 0.7 per 100,000, and then gradually rose to 0.9 during the following months of September and October; this was during the great drought, when the river was lower than it had been for a hundred years. The current was sluggish, and filthy pools and ponds were formed at many places along its banks.

In November, with the coming of the floods, the stream was

thoroughly flushed and the water so diluted that the chlorine fell to 0.4 and kept on falling, with minor fluctuations, until shortly after some thirteen-foot floods it reached 0.1, which is fairly pure water considering the chances of contamination.

It appears that a low degree of chlorine follows a flood, and does not occur coincidently with the height of it when the dilution is greatest; this is rendered evident by the flushing action of the flood on the accumulated filthy water from stagnant pools.

A question of much importance was, whether all this pollution came from the city (for the intake of the waterworks is below several sewers) or whether the water was already polluted before it got to the city.

In October we took samples thirty miles above Harrisburg from the middle of the river, and they yielded only 0.3 parts of chlorine per 100,000. The same day samples taken from the city tap gave 0.9 per 100,000, showing that a vast amount of sewage was received into the river between this point and the city.

That it did not all come from the city itself was apparent by the additional experiment of taking samples a short distance above the city the same day that we took samples from the city tap; these samples, taken only a few miles above the city, invariably yielded almost as much chlorine as the city water. The only explanation is that the numerous small towns located on the river and its branches furnish a continual pollution, which is increased or diminished temporarily by drought and flood, and it demonstrates the fact which was long ago ascertained in Europe, that it is not safe to drink unfiltered river water which flows through an inhabited region, though the cities be far apart. Filtration, sooner or later, is the inevitable remedy in such cases as I have described, and the sooner the better.

Incidentally we might mention that during the year these observations were taken there were 118 cases of typhoid fever in the city and 17 deaths, making a typhoid death-rate of 3.4 per 10,000. When we remember that New York City has a typhoid death-rate of something like 1.7 per 10,000, the higher death rate in the smaller city indicates, to an alarming degree, the great deficiency of its water supply.

We have heard much of typhoid fever in Philadelphia; yet here is a vastly smaller city—a country town—which has just as much typhoid in proportion as the great city, with its grossly contaminated water.

The worst feature is that this is the story of many of the smaller

cities. The people do not appreciate the condition of things, because their attention is not so likely to be called to it as in the larger cities, where sanitary inspection and sanitary facts are brought more prominently to notice.

West Fairview, Pa., Aug. 5, 1901.

CIRCULATORY SYSTEM OF SEWERAGE.

The "Cleveland Leader" of July 7th credits ex-Mayor Bolton, of East Cleveland, with the following lucid description of Cleveland's sewerage system:

"There was once a mayor of Cleveland—I'll leave you to guess which," says Mr. Bolton, "who, in one of his speeches, referred to Cleveland's magnificent circulatory system of sewerage. It was at some small and obscure meeting where the mayor thought there were no reporters. But a newspaper man was there and quoted the mayor's words in his report of the meeting. The article fell under the eye of the prominent citizens of some town down in the State, where they were considering sewage problems with a view to adopting a new system for the town. It was thought that, as they had never before heard of the circulatory system, it should be investigated, and a committee was sent to Cleveland to investigate. The committee called on the mayor to have the circulatory system explained, and the mayor turned them over to one or another of the officials. The first official turned them over to another, and so on until finally they fell into the hands of some one who could make no other excuse, and who was caught. The puzzled City Hall man went to the mayor about it, and said that the visitors were not satisfied to be shown a good time, but insisted on seeing the circulatory sewerage system.

" 'Well,' said the mayor, 'take a tug and show it to them.'

"So the visitors were taken to the river, put on board a tug, and the system was shown and explained to them. They were told how the sewage of the city was carried down to the lake by the river and flowed out into the clear blue waters of the inland sea. They could see the dead cats and pieces of cabbage leaf floating on the water to mark the course of the sewage outflow. Then the tug took them over toward the waterworks intake, through which the water supply of the city was drawn and pumped to the reser-

voirs in the high portions of the city, from where it flowed to the houses of the residents and back through the houses and the sewers into the lake again. That, the visitors were told, was Cleveland's circulatory sewerage system. I don't believe it was adopted by the town from which the visitors came."

Cleveland having a monopoly of the right to use the circulatory system, so far as Cuyahoga county is concerned, the smaller towns of the county were compelled to adopt some more scientific and sanitary plan. The State Board of Health would not allow the suburban towns to empty their sewage into the lake until it had been converted into something less unpleasant than sewage.

Glenville was the first of the suburbs to build a sewage plant. It adopted the chemical precipitation and filtration system. The plant is located between the tracks of the Lake Shore Railroad and those of the Shore Line of the Painesville electric road.

Briefly, the system used at this plant, for the erection of which John P. Force, formerly of Cleveland, and now of Columbus, was the engineer, may be thus described. The problem of disposing of the solids in the sewage as it comes from the houses is solved in this plant by mixing lime with the sewage as it stands in a big tank. Lime causes the solids to be precipitated to the bottom of the tank. Then the cleared portion of the sewage is run into filter beds of slag, coke, gravel and sand, passing through one after the other, and the impurities are strained out. The beds are allowed to "rest" a certain portion of the time, and during this time bacteria destroy the impurities from the sewage. This process, which is merely that of nature, also goes on while the sewage is passing through the beds, and the outflow is as clear as crystal, and free from offense.

SUBSTITUTE FOR RUBBER.—The department is in receipt of the following report from Consul Nelson, of Bergen, dated February 6, 1901, relative to the discovery of a cheap substitute for rubber:

After having experimented for several years, a Copenhagen chemist has succeeded in producing a material called "solicum," which possesses qualities that will render it of the greatest importance to the caoutchouc industry. It is produced, it seems, from asphalt, and can be used for the manufacture of linoleum, rubbers, insulators, etc. It is also claimed that the material can be used as a paint, in all colors, and that it is absolutely waterproof.

THE FIGHT AGAINST TUBERCULOSIS IN THE LIGHT OF THE EXPERIENCE GAINED IN THE SUCCESSFUL COMBAT OF OTHER INFECTIOUS DISEASES.*

By Prof. Robert Koch, Geh. Med. Rath,

Direktor des Instituts für Infektions Krankheiten in Berlin und Mitglied des Kaiserl. Gesundh. Amtes.

The task with which this congress will have to busy itself is one of the most difficult, but it is also one in which labor is most sure of its reward.

I need not point again to the innumerable victims tuberculosis annually claims in all countries, nor to the boundless misery it brings on the families it attacks. You all know that there is no disease which inflicts such deep wounds on mankind as this. All the greater, however, would be the general joy and satisfaction if the efforts that are being made to rid mankind of this enemy, which consumes its inmost marrow, were crowned with success.

There are many, indeed, who doubt the possibility of successfully combating this disease, which has existed for thousands of years, and has spread all over the world. This is by no means my opinion. This is a conflict into which we may enter with a surely founded prospect of success, and I will tell you the reasons on which I base this conviction.

TUBERCULOSIS A PREVENTABLE DISEASE.

Only a few decades ago the real nature of tuberculosis was unknown to us; it was regarded as a consequence, as the expression, so to speak, of social misery; and, as this supposed cause could not be got rid of by simple means, people relied on the probable gradual improvement of social conditions, and did nothing. All this is altered now. We know that social misery does indeed go far to foster tuberculosis, but the real cause of the disease is a parasite—that is, a visible and palpable enemy, which we can pursue and

*An address delivered at the general meeting of the British Congress of Tuberculosis, London, July 23, 1901. From the Journal of the American Medical Association, July 27, 1901.

annihilate, just as we can pursue and annihilate other parasitic enemies of mankind.

Strictly speaking, the fact that tuberculosis is a preventable disease ought to have become clear as soon as the tubercle bacillus was discovered, and the properties of this parasite and the manner of its transmission became known. I may add that I, for my part, was aware of the full significance of this discovery from the first, and so would everybody have been who had convinced himself of the causal relation between tuberculosis and the tubercle bacillus. But the strength of a small number of medical men was inadequate to the conflict with a disease so deeply rooted in our habits and customs. Such a conflict requires the co-operation of many, if possible of all, medical men, shoulder to shoulder with the State and the whole population. The moment when such co-operation is possible seems now to have come. I suppose there is hardly any medical man now who denies the parasitic nature of tuberculosis, and among the non-medical public, too, the knowledge of the nature of the disease has been widely propagated.

Another favorable circumstance is that success has recently been achieved in combating several parasitic diseases, for we have learned from these examples how the conflict with pestilences is to be carried on.

SPECIAL PREVENTIVE MEASURES NEEDED FOR VARIOUS DISEASES.

The most important lesson we have learned from this experience is that it is a great blunder to treat pestilences according to a general scheme. This was done in former times; no matter whether the pestilence in question was cholera, plague or leprosy: isolation, quarantine, useless disinfection were always resorted to. But now we know that every disease must be treated according to its own special individuality, and that the measures to be taken against it must be most accurately adapted to its special nature, to its etiology. We are entitled to hope for success in combating tuberculosis only if we keep this lesson constantly in view. As so very much depends just on this point, I shall take the liberty to illustrate it by several examples.

Plague.—The pestilence which is at this moment in the foreground of interest, the bubonic plague, may be instructive to us in several respects.

People used to act upon the conviction that a plague patient was in the highest degree a centre of infection, and that the disease was

transmitted only by plague patients and their belongings. Even the most recent international agreements are based on this conviction. Although, as compared with formerly, we now have the great advantage that we can, with the aid of the microscope and of experiments on animals, recognize every case of plague with absolute certainty, and although the prescribed inspection of ships, quarantine, the isolation of patients, the disinfection of infected dwellings and ships, are carried out with the utmost care, the plague has, nevertheless, been transmitted everywhere, and has in not a few places assumed grave dimensions. Why this has happened we know very well, owing to the experience quite recently gained as to the manner in which the plague is transmitted. It has been discovered that only those plague patients that suffer from plague pneumonia—a condition which is fortunately infrequent—are centres of infection, and that the real transmitters of the plague are the rats. There is no longer any doubt that, in by far the majority of cases in which the plague has been transmitted by ocean traffic, the transmission took place by means of plague among the ship rats. It has also been found that wherever the rats were intentionally or unintentionally exterminated the plague rapidly disappeared; whereas at other places, where too little attention had been paid to the rat plague, the pestilence continued. This connection between the human plague and the rat plague was totally unknown before, so that no blame attaches to those who devised the measures now in force against the plague if these measures had proved unavailing. It is high time, however, that this enlarged knowledge of the etiology of plague be utilized in international as well as in other traffic. As human plague is so dependent on rat plague, it is intelligible that protective inoculation and the application of antitoxic serum have had so little effect. A certain number of human beings may have been saved from the disease by that, but the general spread of the pestilence has not been hindered in the least.

Cholera.—With cholera the case is essentially different; it may under certain circumstances be transmitted directly from human beings to other human beings, but its main and most dangerous propagator is water; and therefore in the combating of cholera, water is the first thing to be considered. In Germany, where this principle has been acted on, we have succeeded for four years in regularly exterminating the pestilence (which was introduced again and again from the infected neighboring countries) without any interruption of traffic.

Hydrophobia.—Hydrophobia, too, is not devoid of instruction for us. Against this disease the so-called protective inoculation proper has proved eminently effective as a means of preventing the outbreak of the disease in persons already infected, but of course such a measure can do nothing to prevent infection itself. The only real way of combating this pestilence is by compulsory muzzling. In this matter also we have had the most satisfactory experience in Germany, but have at the same time seen that the total extermination of the pestilence can be achieved only by international measures; because hydrophobia, which can be very easily and rapidly suppressed, is always introduced again year after year from the neighboring countries.

Leprosy.—Permit me to mention only one other disease, because it is etiologically very closely akin to tuberculosis, and we can learn not a little for the furtherance of our aims from its successful combating. I mean leprosy. It is caused by a parasite which greatly resembles the tubercle bacillus. Just like tuberculosis, it does not break out till long after infection, and its course is almost slower. It is transmitted only from person to person, but only when they come into close contact, as in small dwellings and bedrooms. In this disease, accordingly, immediate transmission plays the main part; transmission by animals, water, or the like is out of the question. The combative measures, accordingly, must be directed against this close intercourse between the sick and the healthy. The only way to prevent this intercourse is to isolate the patients. This was most rigorously done in the Middle Ages by means of numerous leper houses, and the consequence was that leprosy, which had spread to an alarming extent, was completely stamped out in Central Europe. The same method has been adopted quite recently in Norway, where the segregation of lepers has been ordered by a special law. But it is extremely interesting to see how this law is carried out. It has been found that it is not at all necessary to execute it strictly, for the segregation of only the worst cases, and even of only a part of these, sufficed to produce a diminution of leprosy; only so many infectious cases had to be sent to the leper houses that the number of fresh cases kept regularly diminishing from year to year. Consequently the stamping out of the disease had lasted much longer than it would have lasted if every leper had been inexorably consigned to a leper house, as in the Middle Ages; but in this way, too, the same purpose is gained—slowly, indeed, but without any harshness.

SPUTUM THE MAIN SOURCE OF INFECTION IN TUBERCULOSIS.

These examples may suffice to show what I am driving at, which is to point out that, in combating pestilences, we must strike the root of the evil, and must not squander force in subordinate ineffective measures. Now the question is whether what has hitherto been done, and what is about to be done, against tuberculosis, really strikes the root of tuberculosis, so that it must sooner or later die.

In order to answer this question it is necessary first and foremost to inquire how infection takes place in tuberculosis. Of course, I presuppose that we understand by tuberculosis only those morbid conditions which are caused by the tubercle bacillus.

In by far the majority of cases of tuberculosis the disease has its seat in the lungs, and has also begun there. From this fact it is justly concluded that the germs of the disease, that is, the tubercle bacilli, must have got into the lungs by inhalation. As to the question where the inhaled tubercle bacilli have come from, there is also no doubt. On the contrary, we know with certainty that they get into the air with the sputum of consumptive patients. This sputum, especially in advanced stages of the disease, almost always contains tubercle bacilli, sometimes in incredible quantities. By coughing, and even speaking, it is flung into the air in little drops, that is, in a moist condition, and can at once infect persons who happen to be near the coughers. But it may also be pulverized when dried, in the linen or on the floor, for instance, and get into the air in the form of dust.

In this manner a complete circle, a so-called *circulus vitiosus,* has been formed for the process of infection from the diseased lung, which produces phlegm and pus containing tubercle bacilli, to the formation of moist and dry particles (which, in virtue of their smallness, can keep floating a good while in the air), and finally to new infection, if particles penetrate with the air into a healthy lung and originate the disease anew. But the tubercle bacilli may get to other organs of the body in the same way, and thus originate other forms of tuberculosis. This, however, is considerably rarer. The sputum of consumptive people, then, is to be regarded as the main source of the infection of tuberculosis. On this point, I suppose, all are agreed. The question now arises whether there are not other sources too, copious enough to demand consideration in the combating of tuberculosis.

Great importance used to be attached to the hereditary transmission of tuberculosis. Now, however, it has been demonstrated

by thorough investigation that, though hereditary tuberculosis is not absolutely non-existent, it is nevertheless extremely rare, and we are at liberty, in considering our practical measures, to leave this form of origin entirely out of account.

DIFFERENCES BETWEEN HUMAN AND BOVINE TUBERCULOSIS.

But another possibility of tuberculous infection exists, as is generally assumed, in the transmission of the germs of the disease from tuberculous animals to man. This manner of infection is generally regarded nowadays as proved, and as so frequent that it is even looked upon by not a few as the most important, and the most rigorous measures are demanded against it. In this congress also the discussion of the danger with which the tuberculosis of animals threatens man will play an important part. Now, as my investigations have led me to form an opinion deviating from that which is generally accepted, I beg your permission, in consideration of the great importance of this question, to discuss it a little more thoroughly.

Genuine tuberculosis has hitherto been observed in almost all domestic animals, and most frequently in poultry and cattle. The tuberculosis of poultry, however, differs so much from human tuberculosis that we may leave it out of account as a possible source of infection for man. So, strictly speaking, the only kind of tuberculosis remaining to be considered is the tuberculosis of cattle, which, if really transferable to man, would indeed have frequent opportunities of infecting human beings through the drinking of the milk and the eating of the flesh of diseased animals.

Even in my first circumstantial publication on the etiology of tuberculosis I expressed myself regarding the identity of human tuberculosis and bovine tuberculosis with reserve. Proved facts, which would have enabled me sharply to distinguish these two forms of the disease, were not then at my disposal; but sure proofs of their absolute identity were equally undiscoverable, and I therefore had to leave this question undecided. In order to decide it I have repeatedly resumed the investigations relating to it, but so long as I experimented on small animals, such as rabbits and guinea pigs, I failed to arrive at any satisfactory result, though indications which rendered the difference of the two forms of tuberculosis probable were not wanting. Not till the complaisance of the Ministry of Agriculture enabled me to experiment on cattle, the only animals really suitable for these investigations, did I arrive at absolutely conclusive results. Of the experiments which I

have carried out during the last two years along with Professor Schütz of the Veterinary College in Berlin, I will tell you briefly some of the most important.

A number of young cattle which had stood the tuberculin test, and might therefore be regarded as free from tuberculosis, were infected in various ways with tubercle bacilli taken from cases of human tuberculosis; some of them got the tuberculous sputum of consumptive patients direct. In some cases the tubercle bacilli or the sputum were injected under the skin; in others into the peritoneal cavity; in others into the jugular vein. Six animals were fed with tuberculous sputum almost daily for seven or eight months; four repeatedly inhaled great quantities of bacilli, which were distributed in water, and scattered with it in the form of spray. None of these cattle (there were nineteen of them) showed any symptoms of disease, and they gained considerably in weight. From six to eight months after the beginning of the experiments they were killed. In their internal organs not a trace of tuberculosis was found. Only at the place where the injections had been made small suppurative foci had formed, in which few tubercle bacilli could be found. This is exactly what one finds when one injects dead tubercle bacilli under the skin of animals liable to contagion. So the animals we experimented on were affected by the living bacilli of human tuberculosis exactly as they would have been by dead ones—they were absolutely insusceptible to them.

The result was utterly different, however, when the same experiment was made on cattle free from tuberculosis with tubercle bacilli that came from the lungs of an animal suffering from bovine tuberculosis. After an incubation period of about a week the severest tuberculous disorders of the internal organs broke out in all the affected animals. It was all one whether the infecting matter had been injected only under the skin or into the peritoneal cavity or the vascular system. High fever set in, and the animals became weak and lean; some of them died after a month and a half to two months; others were killed in a miserably sick condition after three months. After death extensive tuberculous infiltrations were found at the place where the injections had been made, and in the neighboring lymphatic glands, and also far advanced alterations of the internal organs, especially the lungs and the spleen. In the cases in which the injection had been made into the peritoneal cavity the tuberculous growths which are so characteristic of bovine tuberculosis were found on the omentum and peritoneum. In short, the cattle proved just as susceptible to infection by the

bacillus of bovine tuberculosis as they had proved insusceptible to infection by the bacillus of human tuberculosis. I wish only to add that preparations of the organs of the cattle which were artificially infected with bovine tuberculosis in these experiments are exhibited in the Museum of Pathology and Bacteriology.

An almost equally striking distinction between human and bovine tuberculosis was brought to light by a feeding experiment with swine. Six young swine were fed daily for three months with the tuberculous sputum of consumptive patients. Six other swine received bacilli of bovine tuberculosis with their food daily for the same period. The animals that were fed with the sputum remained healthy and grew lustily, whereas those that were fed with the bacilli of bovine tuberculosis soon became sickly, were stunted in their growth, and half of them died. After three months and a half the surviving swine were all killed and examined. Among the animals that had been fed with sputum no trace of tuberculosis was found, except here and there little nodules in the lymphatic glands of the neck, and in one case a few gray nodules in the lungs. The animals, on the other hand, which had eaten bacilli of bovine tuberculosis had, without exception (just as in the cattle experiment), severe tuberculous diseases, especially tubercular infiltration of the greatly enlarged lymphatic glands of the neck and of the mesenteric glands, and also extensive tuberculosis of the lungs and the spleen.

The difference between human and bovine tuberculosis appeared not less strikingly in a similar experiment with asses, sheep and goats, into whose vascular system the two kinds of tubercle bacilli were injected.

Our experiments, I must add, are not the only ones that have led to this result. If one studies the older literature of the subject and collates the reports of the numerous experiments that were made in former times by Chauveau, Günther and Harms, Bollinger and others, who fed calves, swine and goats with tuberculous material, one finds that the animals who were fed with the milk and pieces of the lungs of tuberculous cattle always fell ill of tuberculosis, whereas those that received human material with their food did not. Comparative investigations regarding human and bovine tuberculosis have been made very recently in North America by Smith, Dinwiddie, Frothingham and Repp, and their result agreed with ours. The unambiguous and absolutely conclusive results of our experiments are due to the fact that we chose methods of infection which exclude all sources of error, and carefully avoided

everything connected with the stalling, feeding and tending of the animals that might have a disturbing effect on the experiments.

Considering all these facts, I feel justified in maintaining that human tuberculosis differs from bovine, and cannot be transmitted to cattle. It seems to me very desirable, however, that these experiments should be repeated elsewhere, in order that all doubt as to the correctness of my assertion may be removed.

I wish only to add that, owing to the great importance of this matter, our Government has resolved to appoint a commission to make further inquiries on the subject.

IS MAN SUSCEPTIBLE TO BOVINE TUBERCULOSIS?

But, now, how is it with the susceptibility of man to bovine tuberculosis? This question is far more important to us than that of the susceptibility of cattle to human tuberculosis, highly important as that is, too. It is impossible to give this question a direct answer, because, of course, the experimental investigation of it with human beings is out of the question. Indirectly, however, we can try to approach it. It is well known that the milk and butter consumed in great cities very often contain large quantities of the bacilli of bovine tuberculosis in a living condition, as the numerous infection experiments with such dairy products on animals have proved. Most of the inhabitants of such cities daily consume such living and perfectly virulent bacilli of bovine tuberculosis, and unintentionally carry out the experiment which we are not at liberty to make. If the bacilli of bovine tuberculosis were able to infect human beings, many cases of tuberculosis caused by the consumption of alimenta containing tubercle bacilli could not but occur among the inhabitants of great cities, especially the children. And most medical men believe that this is actually the case.

In reality, however, it is not so. That a case of tuberculosis has been caused by alimenta can be assumed with certainty only when the intestine suffers first; that is, when a so-called primary tuberculosis of the intestine is found. But such cases are extremely rare. Among many cases of tuberculosis examined after death, I myself remember having seen primary tuberculosis of the intestine only twice. Among the great post-mortem material of the Charité Hospital in Berlin 10 cases of primary tuberculosis of the intestine occurred in five years. Among 933 cases of tuberculosis in children at the Emperor Frederick's Hospital for Children, Baginsky never found tuberculosis of the intestine without simultaneous dis-

ease of the lungs and the bronchial glands. Among 3,104 post-mortem examinations of tuberculous children, Biedert observed only 16 cases of primary tuberculosis of the intestine. I could cite from the literature of the subject many more statistics of the same kind, all indubitably showing that primary tuberculosis of the intestine, especially among children, is a comparatively rare disease; and of these few cases that have been enumerated, it is by no means certain that they were due to infection by bovine tuberculosis. It is just as likely that they were caused by the widely propagated bacilli of human tuberculosis, which may have got into the digestive canal in some way or other; for instance, by swallowing saliva from the mouth. Hitherto nobody could decide with certainty in such a case whether the tuberculosis of the intestine was of human or of animal origin. Now we can make the diagnosis. All that is necessary is to cultivate in pure culture the tubercle bacilli found in the tuberculous material, and to ascertain whether they belong to bovine tuberculosis by inoculating cattle with them. For this purpose I recommend subcutaneous injection, which yields quite specially characteristic and convincing results. For half a year past I have occupied myself with such investigations, but, owing to the rareness of the disease in question, the number of the cases I have been able to investigate is but small. What has hitherto resulted from this investigation does not support the assumption that bovine tuberculosis occurs in man.

Though the important question whether man is susceptible to bovine tuberculosis at all is not yet absolutely decided, and will not admit of absolute decision to-day or to-morrow, one is nevertheless already at liberty to say that, if such a susceptibility really exists, the infection of human beings is but a very rare occurrence. I should estimate the extent of the infection by the milk and flesh of tuberculous cattle, and the butter made of their milk, as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures against it.

HUMAN SPUTUM THE MAIN SOURCE OF HUMAN TUBERCULOSIS.

So the only main source of the infection of tuberculosis is the sputum of consumptive patients, and the measures for the combating of tuberculosis must aim at the prevention of the dangers arising from its diffusion. Well, what is to be done in this direction? Several ways are open. One's first thought might be to consign all persons suffering from tuberculosis of the lungs, whose sputum contain tubercle bacilli, to suitable establishments. This,

however, is not only absolutely impracticable, but also unnecessary. For a consumptive who coughs out tubercle bacilli is not necessarily a source of infection on that account, so long as he takes care that his sputum is properly removed and rendered innocuous. This is certainly true of very many patients, especially in the first stages, and also of those who belong to the well-to-do classes, and are able to procure the necessary nursing. But how is it with people of very small means? Every medical man who has often entered the dwellings of the poor, and I can speak on this point from my own experience, knows how sad is the lot of consumptives and their families there. The whole family have to live in one or two small, ill-ventilated rooms. The patient is left without the nursing he needs, because the able-bodied members of the family must go to their work. How can the necessary cleanliness be secured under such circumstances? How is such a helpless patient to remove his sputum, so that it may do no harm? But let us go a step further and picture the condition of a poor consumptive patient's dwelling at night. The whole family sleep crowded together in one small room. However cautions he may be, the sufferer scatters the morbid matter secreted by his diseased lungs every time he coughs, and his relatives close beside him must inhale this poison. Thus whole families are infected. They die out, and awaken in the minds of those who do not know the infectiousness of tuberculosis the opinion that it is hereditary, whereas its transmission in the cases in question was due solely to the simplest process of infection, which does not strike people so much, because the consequences do not appear at once, but generally only after the lapse of years.

FOCI OF TUBERCULOUS INFECTION.

Often, under such circumstances, the infection is not restricted to a single family, but spreads in densely inhabited tenement houses to the neighbors, and then, as the admirable investigations of Biggs have shown in the case of the densely peopled parts of New York, regular nests or foci of disease are formed. But if one investigates these matters more thoroughly, one finds that it is not poverty *per se* that favors tuberculosis, but the bad domestic conditions under which the poor everywhere, but especially in great cities, have to live. For, as the German statistics show, tuberculosis is less frequent, even among the poor, when the population is not densely packed together, and may attain very great dimensions among a well-to-do population when the domestic conditions, especially as

regards the bedrooms, are bad, as is the case, for instance, among the inhabitants of the North Sea coast. So it is the overcrowded dwellings of the poor that we have to regard as the real breeding places of tuberculosis; it is out of them that the disease always crops up anew, and it is to the abolition of these conditions that we must first and foremost direct our attention if we wish to attack the evil at its root, and to wage war against it with effective weapons.

This being so, it is very gratifying to see how efforts are being made in almost all countries to improve the domestic conditions of the poor. I am also convinced that these efforts, which must be promoted in every way, will lead to a considerable diminution of tuberculosis. But a long time must elapse ere essential changes can be effected in this direction, and much may be done meanwhile in order to reach the goal much more rapidly.

THE NEED FOR HOSPITALS FOR CONSUMPTIVES.

If we are not able at present to get rid of the danger which small and overcrowded dwellings involve, all we can do is to remove the patients from them, and in their own interests and that of the people about them, to lodge them better; and this can be done only in suitable hospitals. But the thought of attaining this end by compulsion of any kind is very far from me; what I want is that they may be enabled to obtain the nursing they need better than they can obtain it now. At present a consumptive in an advanced stage of the disease is regarded as incurable and as an unsuitable inmate for a hospital. The consequence is that he is reluctantly admitted and dismissed as soon as possible. The patient, too, when the treatment seems to him to produce no improvement, and the expenses, owing to the long duration of his illness, weigh heavily upon him, is himself animated by the wish to leave the hospital soon. That would be altogether altered if we had special hospitals for consumptives, and if the patients were taken care of there for nothing, or at least at a very moderate rate. To such hospitals they would willingly go; they could be better treated and fed there than is now the case. I know very well that the execution of the project will have great difficulties to contend with, owing to the considerable outlay it entails. But very much would be gained if, at least in the existing hospitals, which have to admit a great number of consumptives at any rate, special wards were established for them in which pecuniary facilities would be offered them. If only a considerable fraction of the whole number of consumptives were

suitably lodged in this way, a diminution of infection, and consequently of the sum total of tuberculosis, could not fail to be the result. Permit me to remind you in this connection of what I said about leprosy. In the combating of that disease also great progress has already been made by lodging only a fair number of the patients in hospitals. The only country that possesses a considerable number of special hospitals for tuberculous patients is England, and there can be no doubt that the diminution of tuberculosis in England, which is much greater than in any other country, is greatly due to this circumstance. I should point to the founding of special hospitals for consumptives and the better utilization of the already existing hospitals for the lodging of consumptives as the most important measure in the combating of tuberculosis, and its execution opens a wide field of activity to the State, to municipalities and to private benevolence. There are many people who possess great wealth, and would willingly give of their superfluity for the benefit of their poor and heavily afflicted fellow creatures, but do not know how to do this in a judicious manner. Here is an opportunity for them to render a real and lasting service by founding consumption hospitals or purchasing the right to have a certain number of consumptive patients maintained in special wards of other hospitals free of expense.

As, however, unfortunately, the aid of the State, the municipalities and rich benefactors will probably not be forthcoming for a long time yet, we must for the present resort to other measures that may pave the way for the main measure just referred to, and serve as a supplement and temporary substitute for it.

NOTIFICATION.

Among such measures I regard obligatory notification as specially valuable. In the combating of all infectious diseases it has proved indispensable as a means of obtaining certain knowledge as to their state, especially their dissemination, their increase and decrease. In the conflict with tuberculosis also we cannot dispense with obligatory notification; we need it not only to inform ourselves as to the dissemination of this disease, but mainly in order to learn where help and instruction can be given, and especially where the disinfection which is so urgently necessary when consumptives die or change their residences has to be effected. Fortunately it is not at all necessary to notify all cases of tuberculosis, nor even all cases of consumption, but only those which, owing to the domestic conditions, are sources of danger to the people about them. Such

limited notification has already been introduced in various places in Norway, for instance, by a special law; in Saxony by a ministerial decree; in New York and in several American towns, which have followed its example. In New York, where notification was optional at first, and was afterwards made obligatory, it has proved eminently useful. It has thus been proved that the evils which it used to be feared the introduction of notification for tuberculosi would bring about need not occur, and it is devoutly to be wished that the examples I have named may soon excite emulation everywhere.

DISINFECTION.

There is another measure, closely connected with notification—namely, disinfection, which, as already mentioned, must be effected when consumptives die or change their residence, in order that those who next occupy the infected dwelling may be protected against infection. Moreover, not only the dwellings, but also the infected beds and clothes of patients, ought to be disinfected.

EDUCATION OF THE PUBLIC.

A further measure, already recognized on all hands as effective, is the instructing of all classes of the people as to the infectiousness of tuberculosis, and the best way of protecting oneself. The fact that tuberculosis has considerably diminished in almost all civilized States of late is attributable solely to the circumstance that knowledge of the contagious character of tuberculosis has been more and more widely disseminated, and that caution in intercourse with consumptives has increased more and more in consequence. If better knowledge of the nature of tuberculosis has alone sufficed to prevent a large number of cases, this must serve us as a significant admonition to make the greatest possible use of this means, and to do more and more to bring it about, that everybody may know the dangers that threaten him in intercourse with consumptives. It is only to be desired that the instructions may be made shorter and more precise than they generally are, and that special emphasis be laid on the avoidance of the worst danger of infection, which is the use of bedrooms and small, ill-ventilated workrooms simultaneously with consumptives. Of course the instructions must include directions as to what consumptives have to do when they cough, and how they are to treat their sputum.

SANATORIA.

Another measure which has come into the foreground of late, and which at this moment plays to a certain extent a paramount

part in all efforts for the combating of tuberculosis, works in quite another direction. I mean the founding of sanatoria for consumptives.

That tuberculosis is curable in its early stages must be regarded as an undisputed fact. The idea of curing as many tuberculous patients as possible in order to reduce the number of those that reach the infectious stage of consumption, and thus to reduce the number of fresh cases, was therefore a very natural one. The only question is whether the number of persons cured in this way will be great enough to exercise an appreciable influence on the retrogression of tuberculosis. I will try to answer this question in the light of the figures at my disposal.

According to the business report of the German Central Committee for the Establishment of Sanatoria for the Cure of Consumptives, about 5,500 beds will be at the disposal of these institutions by the end of 1901, and then, if we assume that the average stay of each patient will be three months, it will be possible to treat at least 20,000 patients every year. From the reports hitherto issued as to the results that have been achieved in the establishments, we learn further that about 20 per cent. of the patients that have tubercle bacilli in their sputum, lose them by the treatment there. This is the only sure test of success, especially as regards prophylaxis. If we make this the basis of our estimates, we find that 4,000 consumptives will leave these establishments annually as cured. But according to the statistics ascertained by the German Imperial Office of Health, there are 226,000 persons in Germany over 15 years of age who are so far gone in consumption that hospital treatment is necessary for them. Compared with this great number of consumptives, the success of the establishments in question seems so small that a material influence on the retrogression of tuberculosis in general is not yet to be expected of them. But pray do not imagine that I wish, by this calculation of mine, to oppose the movement for the establishment of such sanatoria in any way. I only wish to warn against an overestimation of their importance which has recently been observable in various quarters, based apparently on the opinion that the war against tuberculosis can be waged by means of sanatoria alone, and that other measures are of subordinate value. In reality the contrary is the case. What is to be achieved by the general prophylaxis resulting from recognition of the danger of infection and the consequent greater caution in intercourse with consumptives, is shown by a calculation of Cornet's regarding the decrease of mortality from tuberculosis in

Prussia in the years 1889 to 1897. Before 1899 the average was 31.4 per 10,000, whereas in the period named it sank to 21.8, which means that in that short space of time the number of deaths from tuberculosis was 184,000 less than was to be expected from the average of the preceding years. In New York, under the influence of the general sanitary measures directed in a simply exemplary manner by Biggs, the mortality from tuberculosis has diminished by more than 35 per cent. since 1886; and it must be remembered that both in Prussia and New York the progress indicated by these figures is due to the first beginnings of these measures. Considerably greater success is to be expected of their further development. Biggs hopes to have got so far in five years that in the city of New York alone the annual number of deaths from tuberculosis will be 3,000 less than formerly.

Now, I do indeed believe that it will be possible to render the sanatoria considerably more efficient. If strict care be taken that only patients be admitted for whom the treatment of those establishments is well adapted, and if the duration of the treatment be prolonged, it will certainly be possible to cure 50 per cent., and perhaps still more. But even then, and even if the number of the sanatoria be greatly increased, the total effect will always remain but moderate. The sanatoria will never render the other measures I have mentioned superfluous. If their number become great, however, and if they perform their functions properly, they may materially aid the strictly sanitary measures in the conflict with tuberculosis.

CONCLUSION.

If now, in conclusion, we glance back once more to what has been done hitherto for the combating of tuberculosis, and forward to what has still to be done, we are at liberty to declare with a certain satisfaction that very promising beginnings have already been made. Among these I reckon the consumption hospitals of England, the legal regulations regarding notification in Norway and Saxony, the organization created by Biggs in New York—the study and imitation of which I most urgently recommend to all municipal sanitary authorities—the sanatoria, and the instruction of the people. All that is necessary is to go on developing these beginnings, to test, and if possible to increase their influence on the diminution of tuberculosis, and wherever nothing has yet been done, to follow the examples set elsewhere.

If we allow ourselves to be continually guided in this enterprise

by the spirit of genuine preventive medical science, if we utilize the experience gained in conflict with other pestilences, and aim with clear recognition of the purpose and resolute avoidance of wrong roads, at striking the evil at its root, then the battle against tuberculosis, which has been so energetically begun, cannot fail to have a victorious issue.

MEASURES ADOPTED BY DIFFERENT NATIONS FOR THE PREVENTION OF CONSUMPTION.

From "The London Times" of July 25th.

At the general meeting, held at St. James' Hall, July 24th, an address was delivered by PROFESSOR BROUARDEL, Dean of the Faculty of Medicine in Paris, on "The Measures Adopted by Different Nations for the Prevention of Consumption." The Right Hon. H. Chaplin, M. P., took the chair. Professor Brouardel read his paper in French.

He said that mortality from tuberculosis varied according to the country. In some cases it was accountable for a sixth, a fifth and sometimes a fourth of the total mortality. Havoc such as this made it compulsory that all nations and governments should strictly inquire into, and adopt, measures to arrest the propagation of a disease which, in these days, was the greatest enemy of the human race. The wonder was that the voice of alarm had been so long in making itself heard, and that for centuries our ancestors had looked impassively on the disasters going on around them. There were several reasons for this apparent indifference. The struggle was considered useless; the disease incurable; it was not known how it spread. Exaggerating the import of some observations, it was agreed that phthisis was hereditary. They were lulled to sleep by this formula, which served as a pillow for idleness and exempted them from investigating the origin of the mischief. Popular observations were looked on as old wives' tales—*e. g.*, Morgagni's, who, in the seventeenth century, stated that in Italy

it was customary to burn the bedding of persons who had died from phthisis, and who declared that he was frightened to make a post mortem on cases of phthisis. But when, on December 5, 1865, Villemin showed experiments at the Academy of Medicine which proved the real presence of the contagion, when our illustrious colleague, Professor Robert Koch, had discovered and demonstrated to the medical world the agent of this contagion, every one felt that a new way was opened to humanity, and every nation wished to profit for the public good by the recent scientific discoveries. Before the scientists he had just mentioned had actually made known their discoveries, the English people had already begun the struggle. Convinced by observation that tuberculosis thrived in dark and damp dwellings, in 1836—nearly seventy years ago—they passed a law providing for the construction of healthy houses. And since that date their zeal had not abated. They had, with admirable perseverance, passed more than ten acts of Parliament; they had rendered salubrious the dwellings of the poor, the workshop, the town and the whole kingdom. This effort had been described by the name of the Queen who presided over its direction—the Victorian era. No greater homage could be paid to her gracious majesty, and, in the name of all his countrymen, he united with his English colleagues in adopting this characteristic name for the crusade that was undertaken and for the success obtained. He was asked by the committee to make the subject of his address "The Measures Adopted by Different Nations for the Prevention of Consumption;" but, unfortunately, precise information was difficult to collect, and the time at his disposal for its verification was very short, so that there would, he feared, be lacunæ, probably even errors.

LEGISLATION.

He begged to dwell a moment on legislation. It was only possible to bring a law into force that interferes with our daily life, that disturbs inveterate habits, and that has to be carried out in the bosom of the domestic hearth, when it was called for by public opinion; when all were convinced of its benefits, and every one recognized the danger of his vicious habits, and was ready personally to reform them and to require his neighbor to do the same. How was this anti-tubercular education of public opinion to be carried out? They founded in England, in 1899, under the presi-

dency of his royal highness the Prince of Wales, a national association for the prevention of consumption and other forms of tuberculosis. Its object was to carry out prevention by educating the masses. Germany founded societies for the construction of sanatoria, and then societies for the propagation of the idea, to popularize sanitary ideas. In Belgium there was a national league against tuberculosis, with its seat in Brussels. Each province had an independent branch. In Norway the Storthing voted 40,000 crowns for the purpose of printing and distributing a popular work on tuberculosis by Dr. Klaus Haussen, and 2,000 crowns to form a travelling fund for doctors wishing to gain information about the management of sanatoria. In France the Society for the Prevention of Tuberculosis by Popular Education, under the direction of Dr. Peyrot, had collected together those who could teach with authority. Thus gradually in all countries the public were beginning to realize that personal care and cleanliness were necessary to obviate contagion, and were also realizing that other idea, to his mind equally important, that a consumptive patient was only dangerous if the necessary precautions were not taken around him, and if he himself did not take them to protect his relatives, friends and fellow workmen from contagion. The danger was in the sputum, which contained thousands of contagious germs. To expectorate on the ground was a disgusting and dangerous habit. Once this habit had quite disappeared, tuberculosis would decrease rapidly. In America this habit was against the law, and there had been a press campaign against it. The American was a great newspaper reader, and he quickly realized the consequences of this deplorable habit. As an example might be quoted the case of a millionaire, Mr. Bradbury, who, punished for the first offence by a fine, on repeating it was sentenced to twenty-four hours' imprisonment. (Cheers.) At Sydney a fine of £1 was imposed on persons for spitting in the streets. In Europe, though we were not so strict, we were none the less convinced of this danger.

HOUSING OF THE WORKING CLASSES.

Recognizing that insalubrious dwellings were one of the most potent agents in the propagation of tuberculosis, the legislations of the different countries had kept this insalubrity well in view, and had made laws ordering the destruction of unhealthy dwellings. In England, in 1836, legislation intervened in favor of as-

sociations for building workmen's dwellings, and numerous acts had been passed since then dealing with lodging houses and artisans' dwellings. This action on the part of the government had led to the intervention of benefactors, among whom he mentioned Mr. Peabody and Miss Octavia Hill. In Germany private initiative had not been so successful. Belgium had been one of the most enthusiastic nations in taking up the movement in favor of healthy dwellings. The law, passed in 1889, formed committees in each administrative district to build and let healthy houses to workmen. In Denmark building societies had flourished best of all. In 1600 Christian IV set the example by erecting houses with gardens for the employees of his house. In France he mentioned the law of 1850, dealing with unhealthy dwellings; Du Mesnil's work on lodging the poor in Paris; the law passed November 30, 1894, which defined the powers of the State and of private initiative in the construction of working dwellings. It was no uncommon thing to see one room in Paris occupied by five, six, eight and sometimes twelve persons. They were continually coming in contact with one another, chances of contagion were increased by this fact alone, and, in addition to the limited space, had to be added the dirtiness of the occupants; or, as he should say, the impossibility of keeping sufficiently clean. Thus small tuberculosis foci were created, which invaded the whole house, the workmen and employees carried the germs of disease into their workshops and offices, and soon made a large tuberculosis focus of the town.

ALCOHOL AND CONSUMPTION.

Unhealthy dwellings caused other disasters; they were not pleasant to pass the time in, and the workman stayed in his home as little as possible; he ate there and slept there, but the rest of his time was spent in the public house. In fact, alcoholism was the most potent factor in propagating tuberculosis. He would quote but two sets of statistics, but they spoke for themselves. Tatham's showed that the mean mortality being represented by 100, that caused by tuberculosis was among: Barmen, 257; peddlers, 239; dock laborers, 176; strolling musicians, 174; hair-dressers, 149; brewers, 148; sweeps, 141; publicans, 140; coachmen, 124; coalmen, 116; butchers, 105. Baudran, of Beauvais, had shown that mortality from tuberculosis and from alcoholism was nearly identical. In this connection he obtained the following results:

Deaths from Tuberculosis in 10,000 Inhabitants.	*Annual Consumption of Litres of Alcohol per Head.*
30 to 40	12.47
40 to 50	15.21
50 to 60	14.72
70 to 80	16.36
80 to 90	17.16
More than 90	50.70

Any measure, State or individual, tending to limit the ravages of alcoholism will be our most precious auxiliary in the crusade against tuberculosis.

HOMES FOR CHILDREN.

Thanks to the help of some towns and of private initiative in Italy and France, and in other countries, sanatoria by the seaside had been established for weakly and scrofulous children. There were fourteen in France, which accommodate more than two thousand children a year, and with excellent results. Inspired by the same idea, some countries had started holiday colonies, and temporary visits to places by the sea or in the mountains. In 1893, with the same object in view, Mme. Hervien started at Sedan working gardens for children, young people and their parents. These gardens occupied more than two thousand square metres around the town, and accommodated 321 families, composed of 1,251 persons. The society supplied tools, seeds and manure to each family. In 1894 the Jesuit Father Volpette started the working gardens at St. Etienne. They covered about forty-two acres, and accommodated 410 families, composed of 2,460 persons. On the ground let, working houses were built. About ten had already been built by the lodgers. There were working gardens at Bercy, and some were now being made at Fontainebleau and at Villeurbane, near Lyons.

THE CURE OF CONSUMPTION.

After some further remarks on tuberculous milk and meat, the lecturer passed on to the treatment and cure of tuberculosis. The idea that tuberculosis can be cured dated back to Hippocrates. "Phthisis, if treated early enough, gets well," said the Father of Medicine. After twenty-five centuries we were supporting the

same theory, which to some might appear paradoxical. Still, all anatomo-pathologists had confirmed its truth. Laennec, Nat. Guillot, Letulle proved that in more than half the post mortems made old healed tuberculous lesions were to be found. As for his personal experience at the morgue in Paris, where he frequently made post mortems on accidental deaths, he could state that in half the cases, if the person on whom the post mortem was made had lived in Paris for about ten years, he found healed tuberculous lesions, either in the form of cretaceous transformation or fibrous cicatrization. Phthisis, therefore, was curable, even in its most advanced stages. This was not only maintained by anatomo-pathologists, but by all medical men who had made a special study of the disease. Granchee summed the matter up thus: "Tuberculosis is the most easily cured of chronic diseases." As a tuberculous patient can be cured, everything possible must be done to bring this about by careful organization. The remedies to be recommended varied according to the stage to which the disease had got, and also if the patient was single, married or father of a family. For patients in the earliest stage dispensaries for workingmen had been established in Germany and Belgium. Experience showed that workmen did not shun these dispensaries; some came because they had a cough, others because they knew themselves attacked. Those who visited the dispensary received the necessary attention from the doctors, and were told the danger of dissemination by sputum, alcoholism, etc. They were looked after, they got meat gravy—one or two meals, as far as funds would allow. Their families were helped, and an eye was kept on their homes from the hygienic point of view; as far as possible, the misery by which the poor man was threatened was kept away from him.

SANATORIA.

Among these patients some were found who must be sent to a sanatorium. If the patient was an unmarried man, and if he could be sent to a sanatorium, his chances of recovery were very great; but for a married man to go meant that his wife and family must be provided for during his absence and his mind relieved of all anxiety on their account. Relief banks for assisting the families of the inmates are most necessary to sanatoria. And in many cases sanatoria were essential to complete the work begun at the dispensary. In Germany there were eighty-three public sanatoria open or ready to open. They accommodated twelve thousand pa-

tients a year. They had been built by local insurance, by sickness banks, by the manufacturers, who have combined to found sanatoria for their workpeople, and by parishes which had united for the purpose. There were most of the latter. In some parts a tax of from a penny a head had been exacted. The State has founded several sanatoria for its servants—the Forests Department, Railway Department and the State of Hamburg. The Commission of the Budget of the Reichstag decided to build State sanatoria under the control of the Ministry of the Interior. The treatment lasted at least ninety days, and experience had shown that it was good for the patients to spend another month at the sanatorium in the year following recovery. In these circumstances, how long did the patients keep better? Of those who left the sanatorium in what was considered a satisfactory condition, it had shown that in 1900, 46 per cent. in 1896, 47 per cent. in 1897, 58 per cent. in 1898, and 60 per cent. in 1899, were able to work. The cost per head per patient for the three months' stay amounted to 8 francs per diem, including the cost of assistance given to the patient's family, which was a third of the amount. Germany's example had been followed. England, Scotland, Australia and Canada had erected some few sanatoria. In Austria, Schrötter had the Sanatorium d'Alland built, with three hundred beds. Chevalier von Kusy turned into small sanatoria some huts of the Ducke type. In the United States, they set apart portions of hospitals to make consumptive wards of them. They made about thirty such small sanatoria. The Association of Alabama built one for prisoners, the Navy Department one for sailors. New York had actually six sanatoria. By the munificence of the Czar the Etablissement Halila, in Russia, was built in 1897, and since 1898 that of Tactzi, with two pavilions, accommodating twenty beds for men and twenty beds for women. At Salta Princess Barjatinska had founded an establishment for school-boys. The King of Sweden gave the sum collected at his jubilee (2,300,000 crowns) to build three sanatoria; Parliament voted 800,000 crowns for the same object, and the State gave the ground required for these three sanatoria. Denmark has already two sanatoria, and there is a scheme before Parliament for the erection of public sanatoria. Italy and the Netherlands and Norway had followed suit. In France several sanatoria had been opened—Hauteville, near Lyons; Agincourt, for Paris. Since 1876 they had built the Home of Villepinte, and then that of Ormesson, for young tuberculous patients; and he might mention, in addition, the agricultural colonies of

Cannet, the Jean Dollfus Home at Cannes, the Sanatorium of Gironde, that of Cimiez, near Nice, Agelez, and finally those which had recently been opened or will be—Lille, Nancy, Orleans, Versailles, Amiens, Le Havre, Marseilles and in Paris, the Bligny and Rouen sanatoria, etc. He had also been asked to consider the question from the international point of view. He did not think that it was possible to deal with consumption in this respect as plague, cholera and yellow fever had been dealt with, in order to prevent their being brought into a country. But it would be possible to take international steps in another way. Railway carriages might be disinfected, as well as steamboats and hotels, and the traveller no longer exposed to germs of contagion. That would be of truly international import. The Minister of Public Works in France had recently sent a circular to railway companies calling their attention to the precautions necessary to obviate or diminish risk from tubercular contagion. In several countries, particularly in the United States, hotel keepers who received a consumptive client had to notify it to the municipal authorities, and compulsory disinfection of the room had to be gone through. The Minister of the Interior in Germany had brought in even more stringent measures. Every doctor who attended a case of pulmonary or laryngeal tuberculosis was bound to report it in writing to the police as soon as he had made his diagnosis. After death from tuberculosis the room in which the patient has died has to be disinfected, as well as his belongings. Hotel proprietors, "furnished house" keepers, asylums, and other public institutions were compelled to notify at once every case of tuberculous disease which arose in their establishments. Notification, disinfection, salubrity of hotels, carriages, and steamboats were questions of an international character, which might be advantageously dealt with by representatives of the different nations. The lesson to be drawn from the efforts that had been made by all nations to carry out a crusade against tuberculosis was that in conversation, in the public prints, and in specially prepared pamphlets, we should make it universally known that tubercular contamination can be avoided, and that in addition the disease can be cured. Ten years ago, at the Congress of Hygiene in London, he spoke as follows: "The whole of humanity may rejoice, when at the beginning of a century the name of Jenner can be inscribed, and at its close Pasteur's; it has done more against misery, sickness and death than any preceding century." All honor to the nineteenth century, but the century just begun, in its first year, saw the greatest effort that had ever

been made in favor of public medicine; might no obstacle stand in our way, and might those who succeed us, at the end of the twentieth century, be able to bear witness that our conviction had not been fruitless, and that the results had answered the expectations of the nations, which the organizing committee had brought together, with the highest and noblest motive that had ever animated the human race. (Loud cheers.)

PREVENTIVE MEDICINE IN KENTUCKY.*

By I. N. McCormack, Secretary of the State Board of Health.

Gentlemen: As you are aware, the duties of my office have rapidly increased in recent years, the demands for assistance and advice growing in frequency and importance as the health and life-saving character of our work is more generally recognized by the most intelligent classes of our people.

Small-pox.

As in the previous three years, we have had almost constant warfare against small-pox. We have stamped it out after great trouble and expense in one series of counties time after time, only to have it reappear in other sections, frequently by importation from adjoining or distant States, often by the migration of unvaccinated persons who had been exposed in our own infected districts and left before the character of the disease was recognized, or the authorities knew of the exposure.

Our chief importations have been from Tennessee and West Virginia, in many portions of which States no efforts appear to be made to prevent the spread of the disease. On account of these conditions, and the frequent and expensive outbreaks directly traceable to them, I submit for your consideration the advisability of requiring a certificate of recent vaccination from all persons coming into Kentucky from these States by any method of travel.

In some of our counties the management of small-pox has been model, a correct diagnosis being made in the first case, the case isolated, all other members of the family and other exposed persons

*Report at the annual meeting of the State Board of Health, at Louisville, July 6, 1901.

vaccinated and placed under observation until the period of incubation had passed, and the timely and thorough disinfection of all premises where the disease has existed. In spite of these exceptional instances the practical difficulties and the expense of management have not greatly diminished. In the order of their importance these difficulties are, the neglect of vaccination due to ignorance and indifference rather than to any organized opposition, the failure of physicians to recognize and report first cases, and the profound ignorance, short-sightedness and parsimony of many Fiscal Courts in refusing prompt and cordial support to the county Boards of Health in stamping out the disease.

Forced to Bear Heavy Expenses.

Over and over again I have seen counties forced to expend thousands of dollars in managing epidemics which the timely appropriation of a hundred dollars would have entirely prevented. In these matters each Fiscal Court appears to be a law unto itself, the sad and costly experience of a neighboring county in regard to similar business counting for nothing. An unaccountable impression is widely prevalent, seemingly especially manifest and controlling in county officials, that physicians should not only expose themselves and families to contagion from this loathsome disease without charge, but that it is their duty to furnish vaccination, food and guards upon the same terms. Officials who would not go near one case for a year's salary grumblingly vote to pay for necessary supplies for which health officials have made themselves personally responsible, and after the epidemic is over, litigate or refuse the small per diem which it is a duty, and should be a pleasure, to allow the health officer for his responsible and protective labor. As we have already had the disease in 103 of the 119 counties of the State, and both the courts and health officials have had more or less actual experience with the disease, it is reasonable to hope for better and more economical management in the future.

Another matter pressing for your attention relates to

Pollution of Streams and Water Supply in Kentucky.

Primitive ideas and practices prevail upon this subject among people who are well informed about other matters, and towns, cities and manufacturers discharge their sewage and offal into streams known to be the only source of water supply for other communities without the slightest hesitation. Unless the expensive and disastrous experience of European countries, and the older States

of this Union, is to be repeated here, public attention should be persistently and urgently directed to this evil until efficient legislation can be secured to prevent its continuance. I suggest that a bill be framed under your direction having this purpose in view, and that the Governor be requested to bring it to the special attention of the next General Assembly. This question is so nearly related to the prevention of typhoid fever and the other distinctive filth diseases, which cause such a large sick and death rate in the young men and women of the State, that the two are inseparable.

Louisville's Filter Plant.

In this connection it may not be improper to congratulate the Water Company and the people of Louisville over the prospect of the early completion of the great filter plant here, from which so much improvement in the health of the city may reasonably be expected, and also to call attention to the part which this board took years ago in forcing the necessity for this work upon the authorities and people. Our suggestions and demonstrations aroused much antagonism and adverse criticism at the time and for years afterward, but there is every reason to believe that it was, after all, "bread cast upon the waters." This, however, is of small importance if the people of our great metropolis get pure water and have less sickness and a lower death rate from preventable disease.

Vital Statistics.

Your attention is also called to the fact that our statute that was intended to provide for vital statistics is wholly obsolete and inoperative, and that the few returns made under it are not only incomplete, but often false and misleading. Until we have constant and reliable information from every section of the character and causes of prevailing diseases, as well as exact statistics of births and deaths, the usefulness of our work must be greatly restricted. This matter has been repeatedly brought to the attention of the General Assembly without result, but it is of such importance that I again bring it before you.

Quackery.

The administration of the medical law, a duty which was reluctantly accepted by this board in 1893, because there appeared no other way for having it put in operation, has involved much labor and responsibility, and in recent years expensive litigation not con-

templated or provided for by the General Assembly. While it is generally conceded that no other State has been so greatly benefited by its laws upon this subject as ours, largely because we have exercised the powers conferred with an eye single to the protection of the people from the impositions and ignorance of quackery, our other duties have so grown upon us, and the conditions influencing and controlling medical education have so changed as to whether or not this law might not be more satisfactorily administered, under these changed conditions, by an examining board impartially selected to represent all the schools or systems of the healing art. Such a plan would cause each applicant to rely upon knowledge and merit alone, regardless of the college from which he graduated, and would avoid even the appearance of discrimination for or against any college or system. At the outset, this law was by no means popular, and was widely and recklessly misrepresented by the quack interests, which had long considered our afflicted people as their legitimate prey, but as these charlatans were soon exposed and run out, and the true purpose of the law demonstrated by its fair and equitable administration, it has steadily grown in favor both with the laity and the profession.

As a branch of this question of medical education you have before you the applications of twenty-nine graduates of what are known as three-year schools for 1900 and 1901. These schools did not meet our requirements for those years, and had official notice from me to this effect, and some of these graduates had similar notice before taking the last course. Others claim that they did not receive the notice and that they were misled by the misrepresentations and promises of the schools, and all give more or less plausible reasons for failure to attend schools which met our requirements. There is no doubt in my mind but that a rigid enforcement of the rules will work hardship on these young men not contemplated by the board. All of them are native Kentuckians, and they promise to do post-graduate work as soon as they are able to do so. In addition, most of these schools agree and are pledged to meet our requirements in the future. In view of these facts, I respectfully recommend that certificates be issued to such of these applicants as come from schools which will do this.

The administration of the laws for the prevention of diseases in domestic animals is becoming of greater importance from year to year. The protection furnished to our live stock industries is very great, and it requires constant vigilance and activity upon the part of the State Veterinarian.

LUPUS—A TUBERCULAR AFFECTION OF THE SKIN.*

By W. A. HACKETT, M. B., M. C. P. S., Professor of Dermatology and Venereal Diseases in the Michigan College of Medicine and Surgery.

The different cutaneous affections in which the bacillus of tuberculosis has been found may be divided into four chief varieties: True tuberculosis, miliary tuberculosis, lupus vulgaris, and lupus erythematosus.

TRUE TUBERCULOSIS.

This is a form of primary tuberculosis due to contact with tubercular ulceration and is usually found on the lips, the vulva, or anus. Small tubercular growths are present, which soften gradually and become the foci of round or oval ulcerations, with clear-cut edges. The ulcers are usually covered with sanious purulent discharge, which soon changes into a grayish crust. If the discharge be removed, the bottom of the ulcer will be a red color.

MILIARY TUBERCULOSIS OF THE SKIN.

This disease is more often met with than one would be led to suppose from the publications upon the subject. It occurs nearly always in individuals suffering from some other form of tuberculosis, usually of the lungs.

Many of the cases are traceable to auto-inoculation, while in some the inoculation seems to have originated from without. The intense itching of the skin causes the tuberculous patient to scratch and thus inoculate himself.

Papillomatous granulations soon appear, which spread superficially and become ulcerated.

LUPUS VULGARIS.

This is now recognized as a tuberculous affection of the skin, or mucous membrane, which may proceed to ulceration or not. The form resulting in ulceration is known as lupus exedens, and occurs in persons under thirty years of age, while in the other variety, thin scales are thrown off from the lesion, and it is known as lupus exfoliativus.

SYMPTOMS.

In both varieties, lupus begins in the form of yellowish-red blotches, varying from the size of a millet-seed to that of a pea.

*Read at the American Congress of Tuberculosis, May 15-16, 1901. From advance sheets of the "Bulletin."

Nodules form slowly, and later on break down and ulcerate, becoming covered with scabs. Beneath the scabs is a bed of bloody pus and the ulceration gradually extends, eating away in all directions. The deeper structures become involved after a time, and the muscular, tendinous and cartilaginous tissues are gradually invaded. The nose, mouth, pharynx and conjunctiva are often included in the destructive process, and deformities of these parts result. This awful disease unfortunately attacks the face oftener than any other region. . .

Lupus takes a number of different forms, hence many names have been applied, as papillomatous, vorax, hypertrophied, etc.

All the forms of lupus, with the exception of lupus vorax, progress slowly, and sometimes become stationary, or even recede. Such complications as adenitis, erysipelas, cancer, etc., are apt to occur.

ERYTHEMATOSUS.

This form of lupus is not believed by some to be tuberculous, but the tubercle bacillus has been found in a great many case. It is more common in females than males, and the eruption can sometimes be traced to exposure, to great heat, or to cold.

The skin does not offer to the tubercle bacillus a fertile ground, and its infectious properties often remain limited to the skin, without showing general infectious symptoms. The infectious power of the germ, when capsulated in the tissues, may remain latent for years, ready to break out at any time in the form of lupus from old scars.

TREATMENT.

It is not my intention to go thoroughly into the treatment of lupus, but rather to enter a plea for isolation of these unfortunate patients. They should not be allowed to come into close contact with other members of the family, should sleep in separate rooms, and use different towels, combs, brushes, dishes, etc. Of course, complete isolation would be impossible in many cases, but should be advised as far as possible.

An important feature of the treatment of lupus vulgaris is attention to the general health. Being a tuberculous affection, it is therefore associated with general vital depravity.

Out-of-door exercise, wholesome food, tonics, etc., tend to assist the local measures by increasing the powers of resistance of the tissues to bacillary invasion.

Excision, tuberculin, the Roentgen rays, and the Finsen rays are warmly recommended by different dermatologists.

THE UTILITARIAN PRINCIPLES OF TAXATION AND THEIR RELATION TO ALTRUISM.*

By R. S. GUERNSEY, of the New York Bar.

THE BURDENS OF TAXATION, AND SERVITUDES ON LAND AND ON REAL ESTATE—CITY AND COUNTRY COMPARED.

A comparison of the mode of paying the expenses of making and maintaining roads in rural districts and of making and maintaining streets in cities and villages, is not to suggest that the same method should be adopted and applied to both alike, or that either method is as equally just and appropriate for the one as it is for the other. The comparison is more for the purpose of showing that the utilitarian principles of taxation are better and more nearly complied with in rural districts than they are in cities and villages. Streets in cities and villages, we have seen, are used for additional purposes that are not required of roads in rural districts.

The annual poll tax in towns on every able-bodied male resident for highway purposes, in addition to the tax on property, is because of lack of other ways of obtaining adequate revenue, to relieve the tax on real estate. Villages are allowed by law to impose a poll tax on every able-bodied male resident of one dollar a year for village purposes. Very few villages have availed themselves of this poll tax. It has not been thought advisable to allow cities to do this. Everybody must pay taxes indirectly on things that he uses in cities. A poll tax in cities or in any manufacturing community would be a great injury, as well as unjust to individuals, and the methods of raising revenue for public purposes in rural districts and in cities and villages in New York State is not given for the purpose of urging that the laws of taxation for local purposes should be the same in all classes and conditions of inhabitants and all kinds of property.

The comparisons given are to show how the laws in rural districts are intended to be the most useful and for the greatest good to the greatest number of those in the conditions to which they relate, as viewed by legislators. These essays are not to make a treatise on taxation in its details in New York State, but to show by reference to some of the most important laws that they are

*Continued from page 139.

founded on the principles of utility and the needs of legislation upon the subjects to which they relate—to show the general tendency of this relating to taxation. They have been changed from time to time. Laws on similar subjects will be found in every one of our States, and are varied from time to time as conditions arise and differ. This is not always true in some new and scattered communities. In such places may be found the more experimental and visionary modes of government, that are based upon theory, or they retain primitive laws that have not yet been felt burdensome in their conditions. At the present time in the United States it is the thickly populated cities and States that feel the necessity of new means of obtaining revenue for local improvements, and for the many purposes that are demanded by the times in which we live, and with a view to the future growth and better development of individual character that makes up communities and nations.

High rents compel a multitude to reside (because of their employment) in places where there are few or lax sanitary regulations, and thus they, without knowing the effect, are subject to all the pains and penalties of disease that are akin to such causes.

More than two-thirds of the population of New York City live in tenement houses, as defined by the statute—that is, houses where three or more families reside.

It is conceded that something more must be done by legislative authority to protect the development, growth and happiness of those who are employed in our large cities, and wish to reside there and work for wages, and who can pay a reasonable rent for healthful homes for their families, and are not driven to the unhealthy suburbs and into dwellings because of low rents and of lax sanitary requirements, where disease is in the air and water, and where moral as well as physical conditions are in constant danger of deterioration and destruction.

Choosing a dwelling place must naturally depend upon employment, because rent and other necessaries are to be paid by means of it. Rural districts give low rents, but that may mean little under usual circumstances that prevail with wage earners.

Low rents without productive employment are of no avail; productive employment with high rents is of little avail—dependent upon the margin that is left to supply other wants. Low rent and productive employment in proper proportion to supply other wants is the sound domestic political economy that is implanted in humanity in its most enlightened condition.

The labor, factory, building, tenement house, compulsory school, sanitary and kindred laws on the statute books of New York are the enunciation and result of the humanity that is within us. We have more to do now in regard to humanity to relieve the taxation of the necessaries of life—the door is open for it.

We often read about the odious tax on windows and doors that has prevailed in European countries for centuries, and still prevails in some of them. Do we ever reflect that the practical effect of compelling by law the number and place of windows and doors and ventilation in tenement houses and other costly requirements in and about buildings, and then taxing the value of the cost of them in connection with the land on which they stand, is virtually of the same nature, and a tax on the light and air and water—the prime necessaries of all life? The only difference is in name; the old mode is a direct tax, while that still prevailing among us is an indirect tax, which the user must pay for indirectly by the assessment of their cost upon the property. Do we ever feel that it can be and should be made less by reducing the tax on real estate in some manner?

The construction of tenement houses in New York City within thirty-five years past, under such laws and regulations as existed in regard to buildings, and permitted lack of proper sanitary accommodations of water, light and ventilation, to supply which would cause more expense to the builder and owner without being appreciated by the class of tenants they were intended to get, or because of low rent, became so notorious that, on the recommendation of a commission of citizens appointed by Gov. Roosevelt to investigate and report on the matter, a law was passed in April, 1901, prescribing particularly how far sanitary measures must be complied with for living rooms, in having ventilation, light, water, closets, bath tubs, wash tubs, etc., according to the number of families that were to occupy them. The report of the commission gives some details of the existing conditions, which, it appears, are demanded by the law for the wants and needs of a class of tenants from whom the owner of such buildings often gets twenty per cent. annually on the investment for the cheap structures, that are virtually contaminated with disease caused by uncleanliness and overcrowding, while the moral effect is worse than death to the individuals and to the community at large, and a disgrace to any nation.

The positive requirements of this law of 1901 is evidence enough of the existence and prevalence of such evils among us.

These conditions in cities have largely grown out of a diversion of capital from real estate investments in better houses for low-rent dwellings in New York City, to seek more profitable investmements in some kinds of securities that are not taxable, and to seek investments in other States, in other channels, and in such enterprises as promise to pay best. In doing this, capital is following a natural law of the least resistance to its safety and profit, which is a potent law in the business world, like that in the physical world, that a body will follow the lines of the least resistance. The result is that high rents in New York City are a necessary evil that we must try to overcome with a proper regard for the health and happiness of all, by such a system as is in line with the growth and development of the demands of modern civilization.

Whether the demand for lower rents is caused by the greed of landlords, or the greed of tenants, or the greed of employers, or the greed of toilers, we know that in all its varied aspects it is part of human nature and must be met and dealt with by legislation accordingly. We know that the families of the toilers need more of the prime necessaries of life than they are likely to have when rents are high.

The requirements of the tenement house law of 1901 are eminently proper when applied to the erection of buildings for any purpose. Although it is at a much greater cost to the builder, and hence to the tenant for rent, the ultimate welfare of those that must, or choose to, use it and humanity demand that its requirements should be obeyed.

A proper regard for those that desire or are compelled to hold or use dwellings and buildings, and the general welfare of New York, and a consideration of the more favorable conditions of taxation offered in adjoining States, demand that such kinds and modes of assessment for local improvements and taxation, and the extent to which it now prevails, must be made less, and be more favorable to real estate.

One remedy to have lower rents is to have taxation taken off real estate, as far as can be without parsimony to municipal economy and progress. This can be done by transferring some portion of this tax on real estate to other property and other conditions. The extent and mode of this transfer must depend upon conditions that should be carefully considered from a utilitarian point of view, and applied accordingly in a humane and just manner.

(*To be continued.*)

COSMOPOLITAN HEALTH STUDIES.*

By F. L. Oswald, M. D.,
Author of "Physical Education," "The Remedies of Nature," Etc.

III.—SPAIN.

Race, climate and fate, according to Hippolyte Taine, are the three factors of nation-building, and the auguries of the two first combined to favor Spain above any other country of the eastern continent.

Her mixture of races, as completed about a thousand years ago, comprised the noblest tribes of three world-conquering nations, together with a remnant of heroic aborigines—the Celt-Iberians, who resisted the power of Rome for more than three hundred years. Spain was long the most prosperous province of the Roman Empire, something more than a province in social respects, since it produced such men as the Emperor Trajan and the philosopher Seneca.

The fifth century added the Visigoths, and the seventh the Saracens, both champions of their races and enabled by luck to achieve their conquests without land-destroying wars.

And that land was the Eden of southern Europe. The Goths selected it for a permanent home, after a series of victories that gave them the pick of the Mediterranean peninsulas, and its fertility astonished the followers of Tarik, who had seen the garden-spots of Egypt and Asia Minor.

Blood did tell for a while. For several hundred years Spain alone saved Europe from the reproach of social retrogression; the civilization of the Gothic-Moorish cities was intellectually not much inferior to that of pagan Rome, physically about equal, and morally far superior. The era of the Saracens achieved the first national conquests of Temperance—the anti-alcohol precepts of Pythagoras having been adopted only by a feeble and somewhat compromising sect of mystics.

The chronicle of the Cid seems to have been largely interwoven with fiction, but the Barcelona collection of defensive armor attests the fact that the land of his birth was inhabited by a giant race,

*Continued from page 35.

men as tall as the cavaliers of Cœur de Lion, and as indefatigable as the followers of Hannibal, to judge by the record of their forced marches.

"No wonder the Turks could beat those fellows," said an irreverent Yankee tourist in a museum stocked with relics of the Crusades. "Imagine a man trying to hustle with a parlor-stove for an overcoat."

But the Knights of Calatrava *could* hustle, in spite of such impediments. Their five days' gallop from Burgos to Navarre admits of no doubt; nor their achievements on the battlefield of Navas de Tolosa, where they annihilated a levy of Moslem champions who had been gathered from the most warlike cities of the Spanish and North African coast lands.

How shall we account for that zenith to nadir degradation—the change from ancient Goths to modern Spaniards?

Climatic changes? The invention of gunpowder? In North Africa, too, rifles have become better and the weather grievances worse; yet the Bedouins are still as sinewy and enterprising as their ancestors in the days of Tarik.

But it is true that "villainous saltpeter" witched Spain's chivalry away in the course of a border warfare so persistent that it dwarfed the Thirty Years' War to a mere troopers' skirmish. From the middle of the seventh to the end of the fifteenth century Moors and Goths kept at it, hammer and tongs, and the efficiency of the Moorish scimitars may be inferred from the tradition about the doom of the paladins who had followed the Cid in his eighteen campaigns, and the last words of their chief: "It is not that I expected to win every battle," said old Ruy Diaz, when he counted the survivors of a murderous fight, "but I cannot help noticing the spite of Death in picking out our heroes."

Yet that ominous process of elimination was a trifle compared with the three hundred years' exodus that lured the stoutest and pluckiest sons of Spain to the bonanza fields of the great trans-Atlantic colonies; a country smaller than Peru furnishing emigrants enough to colonize an area of 5,500,000 square miles—nay, restock it again and again, as wars with aborigines and foreign rivals exhausted the preceding instalments. No wonder that the population of the parent country dwindled from 29,000,000 to 14,000,000, and that in many communities the remnant shrunk to a mere *caput mortuum* of invalids and grannies of both sexes.

"Keep out here, Tom," a Vermont village elder snorted at sight of his son; "old men for council, youngsters for war; we're trying

a test case here, and shall tell you if there are any arrests to be made."

Tom, according to a correspondent of the "Detroit Free Press," was a callow youth of fifty—callow at least on top of his head, all the younger males of the little hamlet having departed for the adventure land of the Far West.

Yet, what are, or even were, the temptations of Texas and Oklahoma compared with those of the Spanish-American wonderlands, Eldorados and Edens of the tropics?

Rarely less, and often more, than 200,000 fortune seekers started from Spanish sea ports, year after year, till the old country became a ethnological ruin, a political King Lear, bankrupted by the endowment of twenty-six more or less ungrateful daughters.

And, as misfortunes rarely come alone, the sanitary blessings inherited from the civilization of the Moors were gradually forfeited by the activity of inquisitorial fanatics. Llorente, in his chronicle of the Casa Santa, mentions scores of cases of converts from Mohammedanism incurring trouble by their relapse into the hygienic habits of their former creed. If they questioned the wholesomeness of pork they were fined or lugged off to prison, and released only after their health had been impaired beyond the remedial influence of dietetic measures. If they rebuked a drunkard they were mobbed by a gang of Yahoos anxious to advertise their dissent from the tenets of the Koran; nay, an old citizen of Seville was impeached and tortured under the pretext of suspicions founded upon the complaint of a malicious servant girl, who reported that her employer was in the habit of taking secret baths, and betrayed such an aversion to swine's flesh that she had been obliged to purchase *garbanzas* (pork sausages) out of her own scant wages. The defendant proved that his employment as a coppersmith made ablutions a sanitary necessity, and got several trinitarian physicians to attest the injurious influence of rank meats upon a feeble stomach; but his plea was recorded as an additional offence, and when a wealthy friend at last effected his liberation he was so worn out by brutal ill-treatment that he had to drag himself home on crutches.

Nay, Henry Buckle, in his "History of Civilization," quotes evidence in support of the still more astounding fact that thousands of public *and private* baths were destroyed by order of the Inquisition.

They may have thought it expedient to obliterate all memorials of the vanquished race, but their personal habits often justified the

suspicion that the bigots of that crusade had come to value uncleanliness as next to godliness.

History, it is true, mentions two other persecutions of health-worshippers, the attempted coercion of the pork-abhorring Maccabees and a Persian jehade against the temperate followers of Zoroaster, but in both cases the victims represented only a small percentage of the population, while the compulsory converts from Mohammedanism numbered hundreds of thousands.

Crypto-Moros, as the Castilians called secret votaries of the Koran, are said to have survived the fall of Granada for several generations, and in southern Spain there were even wine merchants who contrived to observe the fifth day of the week and lived as temperate as the "teetotal barkeeper" who used to delight the sight-seers of Louisville, Kentucky.

"I keep lemonade, too," the T. T. B. used to chuckle; "can't a book-store sell the catechisms of more than one denomination?"

The Granada wine-merchants may have calmed their conscience with similar reflections, and "secret temperance" is one of the vices not easy to prevent.

But the plan of cremating rationalists at the rate of 400 per annum at last evinced its effects, and all Spain was swept by a flood-tide of poison-habits. High wines, at first imported from France, were distilled in Malaga, from grapes that deserved a better fate; *elixir de aguardiente*, a curious anticipation of our medicated bitters, was peddled at the end of the seventeenth century, together with miracle working relics and love-potions. Benvenuto Cellini consulted a Spanish quack in an *affaire de cœur*, but thrashed him within an inch of his life when the recipe made his inamorata deadly sick, without effecting anything else but a paroxysm of resentment. Pulque shops sprang up in Puerto Palos, and the nicotine habit soon became a national vice—"the cursed epidemic sparing neither age nor sex," as a would-be reformer expressed it.

The Health School of Salerno recommends a variety of curious compounds as tending to counteract the tobacco passion; but the plurality of Spanish habitués perhaps did not desire to be cured. A cerebral narcotic just suited their needs and became an all but universal substitute for intellectual pastimes.

Sanitary revivalists did arise, but were less successful than Abd-el-Wahab, the Arabian reformer, who united 350,000 of his countrymen in a jehade against the "weed of the Giaours," and actually destroyed a hundred towns to enforce his interdict of tobacco in

any form. And not little bushwhacker towns, either. Hundreds of shops were often burned to insure the annihilation of suspected contraband, and at last the City of the Prophet, Mecca itself, fell into the hands of the reformers, and was ransacked from cellars to palace turrets, then treated to a grand bonfire of confiscated pipe-fodder and fumigated with incense of juniper berries.

The women in the case are said to have launched that storm by harping on the grievance of having to breathe the air of smoke-polluted tents; and in Spain there were no such plaintiffs. The fondness for the fumes of the American weed seems to have become a hereditary perversion; the very school children came to prefer a smoking teacher, and begged for dividends of cigarettes. The "state of physiological tolerance" established by hereditary transmission became more and more complete, and might have caused an inquiry into the mental sanity of an abolitionist.

Did it pervert the olfactory criteria of the sanitary instincts altogether? There are documentary records of the memorable fact that a proposed appropriation for street-cleaning purposes was vetoed by the city fathers of Madrid on the ground that the effluvia of manure and decaying garbage were *needed to mollify* the keen air from the highlands of the Sierra Morena!

Objections to ventilation are often veiled in sophisms, but that garbage verdict has the merit of revealing them in their unqualified idiocy.

Barcelona, with its large foreign population—almost an entrepot of southern France, in fact—makes an exception and has something like a sanitary police; modern Madrid at least knows the value of keeping up appearances; further west things get rapidly worse, and on the Portuguese border there are towns that delegate the work of disinfection to the powers of the air—flies, rooks and *galinassos*, a species of small vulture.

But the nation that "can no longer be nauseated" has at least preserved a keen sense for the odium of effeminacy. The worship of physical prowess is far more general than in any other European country with the exception of Switzerland, and goes hand in hand with a creditable tolerance of popular sports on the day when ninety-nine of a hundred wage-earners find their only chance of leisure.

It would be a mistake to suppose that these sports are limited to bull-ring atrocities; there are side-shows of athletic sports in every larger city, and at least foot races in many villages that cannot afford the expense of a *funcion de toros*.

The Basques, those curious relics of an ante-Celtic race that may have formed the original population of all western Europe, are passionately fond of wrestling matches. They try their hand at weight-lifting, too, but in that specialty cannot compete with the athletes of the north. They are small-footed and, indeed, altogether rather weak-framed, if not stunted; heavy-weight champions being exceptional throughout the Peninsula, and more so, Spanish patriots admit, than in certain districts of the New World—southern Chile, for instance, and northwestern Mexico, where the freedom of boundless hunting grounds has exerted a regenerative influence.

Five feet seven, or five-eight, is about the average size of Catalan recruits; a little less in the south and the southeastern seaport towns; but many of these little *mayos* are all sinew, and able to undergo hardships that would wear out the veterans of the Boer-British campaigns. Boys in their early teens keep up with the galloping horses of an Andalusian stage coach, cracking a monster whip, cheering and shouting in the midst of whirling dust clouds. Weyler's volunteers carried some fifty pounds of camping outfit and ammunition on their marches of twenty-five miles a day, never complaining, though their rations at last became homœopathic in quantity and Kamtschatkalian in quality. "Embalmed beef!" the inadequacy of the term would have made the very contractors grin. The meat rations issued to regulars in the Department of Santiago during the last eighteen months of the struggle consisted of salt-reeking scraps of animal refuse, the scrapings of some condemned pickle-vat, and served with shreds of *chile colorado* (capsicum) to mask the horrid taste. The only fresh meat they ever got were *hutia* steaks, derived from an indigenous mammal of the Cuban highlands, a sort of connecting link between the marmots and rats —unless they were to include the weevils that wriggled in their rations of mouldy crackers.

But these overworked and underfed campaigners rarely voiced a protest, and bore their wounds with the fortitude of Sioux warriors, like their marine comrades, who clung to the wrecks of their battleships, and clenched their teeth in grim silence when eruptions of superheated steam scalded the very skin off their shoulders.

That sort of stoicism is said to be a characteristic of carnivorous mammals, bears display it, and even wolves (though they lose it in their canine metamorphosis); our Redskin beef-eaters have cultivated it to a high degree of perfection; but at least sixty per cent.

of the natives of modern Spain have become frugal in stress of poverty. Like their Mexican kinsmen, they subsist chiefly on corn bread and legumens, with just fat enough to maintain a pretext for the use of their favorite pungencies; and with a decided predilection for organic, in preference to inorganic, condiments.

Nor is there a monoply, or even a decided preponderance, of physiological arguments on the other side. Is salt, as a digestive stimulant and antiseptic, more wholesome than pepper? might prove an interesting topic for a sanitarian debating club.

(*To be continued.*)

THE ART OF LIVING A HUNDRED YEARS.

MORALITY, TEMPERANCE AND INDUSTRY.

By FREDERICK L. HOFFMAN, Statistician of the Prudential Life Insurance Company of America.

In a recently published volume, "The Map of Life," Mr. Lecky has laid down a principle which I cannot think but indispensable as a guiding rule in every discussion of old age and the value of increased longevity. "In all civilized countries," Mr. Lecky writes, "the average duration of life has been raised and there is good reason to believe that not only old age, but also active, useful, enjoyable old age, has become much more frequent"—a useful, enjoyable, active, old age, not mere continued existence, but LIFE—not a weary, monotonous drag of days, but active, useful, cheerful hours, a blessing to the man who lives and to those who live with him. "What I admire in Ramsay," said Boswell to Dr. Johnson, "is his continuing so young." "Why, yes, sir," answered the old doctor, "I value myself upon this, that there is nothing of the old man in my conversation." In a more pointed manner Hazlitt reflected upon old age in his remark: "Artists, I think, who have succeeded in their chief objects, live to be old and agreeable old men. Their minds keep alive to the last. Cosway's spirit never flagged till after 90, and Nollekins, though nearly blind, passed all his mornings in giving directions about some group or bust in his workshop." Such, then, is the ideal conception of old age; a cheerful, useful existence, not a mere continued life of useless years added to other years which have wearily preceded it.

Industry lies at the bottom of social progress, and happiness and long life invariably go hand in hand with days well spent in active employment. Proof is not wanting to show that the man who works has allotted to him a longer share of life than the man who does not work, an idle aristocrat or vagabond and tramp. Occupied males, according to trustworthy data, enjoy a mortality 132 per cent more favorable than those who eat their bread in idleness, and perhaps in no manner and way has nature stamped the sin of idleness with more emphatic disapproval than in the severe rule that he who does not work for his bread shall not live long enough to enjoy the fruit of the labor of others.

VALUE OF TEMPERANCE AND MORALITY.

With industry goes morality as a most, perhaps the most, important factor making for continued and enjoyable existence. Whether it be morality in general or as implied in anti-social trades, he whose existence is adverse to social progress is not likely to live long and ply his trade. Married women with children, following the business of motherhood and home life, are among the most blessed in years and happy hours. Liquor dealers are short-lived, in fact, are among those whose days are least, because their usual habits of intemperance cause most havoc to their constitutions. Temperance in drinking is, as a rule, an essential requirement for long-continued life, though some fond of "golden brown drink that England has brewed for a thousand Octobers" have lived to see the dawn of another century, after a life which in the opinion of teetotalers, should have been cut short in youth. Intemperance is eating is probably far more fatal to long life than any other factor, since idleness and immorality most often go with gluttony. Overweight, in fact, is recognized by medical examiners as one of the signs most unfavorable to longevity, tending to nervous, circulatory and kindred diseases.

Morality and industry, then, must be accepted as essentials making for a long existence. Jews and Quakers enjoy a long life and old age which for cheerfulness and usefulness has probably no equal. Negroes are among those who have the shortest span of life, and the explanation is simple and plain to all who have looked beneath the surface and who have learned with Ratzel that "the frequency of old people is not so much to be ascribed to longevity as to early senility." This point is one which is often overlooked in essays upon longevity, and appearance and vivid imagination take the place of authenticated record of birth and death.

THOSE WHO LIVE LONG.

Mere physical labor, mere activity as such, even if prolonged for many years, cannot be looked upon as being of intrinsic social and economic value. It was Carlyle who touched upon the point with his common emphasis in the remark: "In the name of production, be brutes." Merchants, traders, brokers and all who make the accumulation of wealth their primary object are less likely to live long than those who relegate the pursuit of wealth to the secondary place. The years which a man lives after sixty are indeed to be considered the most important, since the complacent retrospect of active, useful years finds in this period of afterglow its rich reward. A study of sudden deaths of men of affairs will point out lessons of the utmost significance, when we see men like William Windom, Henry George, Roswell P. Flower or Garret A. Hobart pass away at a time when they have just reached the period of greatest usefulness.

Among those whose lives are longest we may mention clergymen, gardeners, farmers, teachers, laborers on farms, artists, engravers, sculptors and architects. The lives of eminent painters alone are a worthy record of long-continued, useful existence, concluding with a cheerful old age, a blessing and hope to new generations. Clergymen have lived long largely, no doubt, because of useful lives lived in temperate ways and helped by a prudent self-denial of things human which are most apt to cut short the natural life of man. There is much to be learned from the vital statistics of occupations which may be applied to a higher social philosophy.

LIST OF DANGEROUS OCCUPATIONS.

The list of dangerous and unhealthy trades is indeed a long and to a sensitive mind a shocking one. Filemakers, potters, hatters, printers, stone cutters, glass workers and smelters work under conditions which cut short their existence, while yet they render useful—in fact, indispensable—service to the community. Most of the conditions which make for ill health in the industries named could be—as others have been—removed, but commercial greed and human indifference are the cause of contiued existence of factors detrimental to human progress hardly yet recognized by otherwise intelligent observers. Conditions of factory life are not as bad in this country as they are abroad, but even here they affect to a considerable degree the health and longevity of employees.

There is implied in this not only a great social waste, but a direct and considerable loss to the employer himself, in that employees developed to a high degree of efficiency die just when their services

are the most useful. Thus, lead poisoning in the potteries, phosphorus poisoning in match works, mercurial poisoning in hat factories and lung diseases in glass works cause annually premature deaths of thousands of able workmen just when these men have reached the age of 40 or 50, and when a lesser degree of activity with more intelligence would produce a sufficient income for a cheerful period of advanced age. Immense progress has been made, especially in this country, where factories are new and where money is liberally spent for improvements, tending to better the conditions under which workingmen live, but a vast field is yet unexplored and unrecognized. Industrial hygiene is in its infancy. The time will come when workingmen will use their unions more for their health than for their wages, and when strikes will take place because of conditions which shorten life rather than because of conditions which are of far less importance. As yet the average workman has but faintly realized the immense possibilities of social amelioration in the direction of a healthier and a longer life.

THE END OF ONE WHO DESPAIRS.

It is not a pleasing task to digress from this essay upon long life into the mystery of despair and self-inflicted death. "Life is a conflict and a march," wrote Mazzini many years ago, in strenuous opposition to Carlyle's gospel of despair. "Not life itself, but the deviation from life, is a disease; life is sacred, life is the aspiration toward the ideal. It is blasphemy to pronounce one word of anger against it." I add his words: "We must not discredit it, but make it holy." Suicide, contempt for life, must be included in the deadly sins. Those who have helped to make the world a better place to live in are the men and women who have realized that we are here to do our duty, inspired by a deep and active feeling of duty, which, once more, in the words of Mazzini, "he believes to be the mission of man upon earth." This duty includes cheerfulness, patient forbearance, yet joy of living and existence; vital feelings of delight, not the soul-deadening cry of despair and unwarranted complaint. Such a life only is worth living to the end of a hundred years. If men wish to live long they must grow old gracefully and to the last hour remain cheerful, for there is an immense economic gain in cheerfulness, just as there is in political, or at least a social, economy of courage and the spirit to dare.

Let a man but will to live and he can. Will is largely a moral product, and will without activity, effort and aim is impossible. "Why, even death itself stands still and waits an hour sometimes

for such a will." Ay, death will wait many a year for the man who has lived aright his years and who has an object worth living for.

INCREASING LENGTH OF LIFE.

I have not thought it worth while to enter at length upon the question of the possibility of long-continued existence. It need not be pointed out that there is no set limit to life, and there appear no physiological reasons why life should end, why the heart should cease to perform its functions at the age of 70 any more than at 120. Certainly the facts are abundant tending to prove that authenticated old age is being attained by men and women in this country with an increasing degree of frequency, and, what is better, to quote the words of E. P. Powell: "It is certain that our American men at 60 are not broken up as badly as our fathers at 40." Immense gains have been made in the direction of decreasing the mortality of children, and larger numbers reach the ages of 30 and 40 than at any other period of our history, but there are still at work deadly foes to long life which continue to elude the control of man. Typhoid fever, consumption and the various forms of lung diseases cause premature death in many cases when life could have been prolonged under improved conditions. But it is due to the diseases of middle life and of the age period 55 and over, the affections of the heart and nervous system, the various forms of liver and urinary diseases, and among women even more than among men, the most dread disease of cancer, that old age is far more rare than it would be could medical science make the progress which surgery has made, and reach that point of exactitude and control of forces by which a disease in its early stages can be successfully arrested. Unhappily, medical treatment is usually sought too late, at a time when the system has been too far broken down by the encroachment of disease germs destroying vital tissues.

IMPROVING HABITS OF YOUTH.

Thus far the gain has been mostly upon the younger lives; it is in youth that we form our habits, and I believe that our young men, in spite of all remarks to the contrary, are to-day stronger, healthier, more active and more ambitious than the youth of any nation at any time in the past. It is no longer fashionable to look pale and delicate, with a tendency to consumption or scrofula and anæmia. Men and maidens to-day must look healthy if they would find partners, and it is simply social justice that those unfit to

marry and procreate their species should not do so. There is a substantial reason for the decreased marriage rate, and that is that large numbers of women—a far too large proportion—are unfit for marriage. It is better so. There is no need for a large increase in population, but every possible need for an increased appreciation of the value of life itself and the increased possibilities for individual development.

John Burn Bailey called attention to the fact that he had noted from his own inquiries "that the mentally deficient or intellectually inactive fail to be represented in his list of the long-lived; energy of brain must co-exist with vigor of the body to insure extreme longevity;" and to this remark I may add one of Hufeland's observations on the art of prolonging life, that "no instance can be found of an idler having attained a remarkable old age."

What I have tried to make clear in these few remarks upon industry and long life is the necessary relation between continued years and increasing usefulness. Mere continued years cannot be looked upon or desired from an individual or social point of view unless the increase of years brings increase of happiness to the one who lives beyond the normal age, tnd to those with whom his existence is interwoven. "Why stay we on earth unless we grow?" Everything pertaining to the right view of long life is to be found in these few words of Browning, "unless we grow." Not a standstill, not a retrogression, a second childhood, decrepit and dependent, but a strong, persistent vitality, continued to the end. Without an intellectual life such existence is impossible. It must prove a bore to the man who lives and to those who have to live with him. No one has expressed this thought more beautifully than Hamerton: "I compare the life of the intellectual"—and, as he has said elsewhere, the intellectual life is possible to all who earnestly desire it —"to a long wedge of gold; the thin end of it begins at birth, and the depth and value of it go on indefinitely, increasing until at last comes Death, who stops the auriferous process. Oh, the happiness of the fortunate old men whose thoughts went deeper and deeper like a wall that runs out into the sea." Such, then, is the old age, the long life worth living, worth striving for, worth fighting for.

CHANCES OF LIVING 100 YEARS.

What, then, are the chances of reaching the age of 100 years under present-day conditions? The answer to this question is somewhat difficult, since life tables are based on the general population,

for which the returns at advanced ages are notably in error, while data supplied by life insurance companies are not applicable to the people in general, including the unhealthy and otherwise impaired from an insurance point of view. For Massachusetts a recent life table has been prepared by which it is possible to arrive at the point desired with at least an approximate degree of accuracy. Dr. S. W. Abbott has calculated on the returns for the years 1893-97 that out of 10,000 born in that State nine persons may be expected to reach the century mark, and those who attain this age may still expect to live 1.2 years longer if males and 1.5 years longer if females. A comparative table for the year 1855 shows that about half a century ago very few indeed had a chance to reach the extreme age of 100, since by a table prepared by Elliott only nine out of 100,000 would survive to that age. In other words, the chance of attaining the age of 100 in Massachusetts is to-day ten times what it was half a century ago.

But in a large measure the attaining of old age by the few is of far less importance to the community than the attaining of middle age and years past middle age by the many. Every death between the ages of 15 and 30 is a social calamity and economic loss, in that a life comes to an end when most has been sunk in its production and when least has been returned to the community in the shape of productive labor and surplus gain. It is, then, a matter of importance to note that there has been a material increase in the number of those who survive to the ages of 30, 40 and 50, although the gain has not been as large as would be desirable and as will be possible under better conditions of city life. At present, in Massachusetts, there are expected to survive to the age of 50 5,275 persons out of every 10,000 born, against 4,409 survivors out of the same number in 1855. At the age of 80 the number of survivors is 1,266 at present, against 1,059 half a century ago; and thus most valuable lives, valuable because of enhanced intelligence and comprehension, have been saved to the State because of the sanitary and other social progress made during the last fifty years.—"Chicago Record-Herald," May 20, 1901.

DETERMINATION.

"It's the only toime on earth," said Mr. Dolan, who was struggling with a balky horse, "that I wisht for an ottymobile."

"Would yez sell the horse?"

"No, sir. I'd never give in like that. I'd hitch the animal up in front of the machine, an' then I'd see whether he'd go or not."—Washington "Star."

THE VERMONT SCHOOL FOR HEALTH OFFICERS.

The annual meeting of this school, in Burlington, July 8-11th, elicited a relatively large attendance and a considerable number of interesting papers, and the discussion of subjects of practical importance.

W. P. Gerhard, C. E., of New York, read a paper on plumbing, in which he differentiated the alleged danger from sewer-gas poisoning and the real danger of devitalized air by bad plumbing, in lessening the power of resistance to disease of whatever kind.

Great advances had been made in plumbing, he said, but more remains to be done. The modern system, in its attempts to remedy defects, has become so complicated that its complexity is a source of danger. A simpler system is needed, which will be more effective and less costly. Law should prescribe, or at least allow, the simpler method. Inspection of drainage, sewerage and plumbing by the proper officials is of paramount importance.

Dr. Cressy L. Wilbur, Superintendent of Vital Statistics for Michigan, read a paper on statistics, which, he said, were not sufficiently respected. They represent tabulated facts, and should trace the movement of population. Their study is the study of the condition and growth of the race, and as such too much importance cannot be attributed to them. They trace not only temporary oscillations of population, but also the greater and more significant changes. They are of utmost value in guiding sanitary legislation, and in aiding health officers by giving warning of epidemic and infectious diseases. Since this is true, too much care cannot be taken in compiling these statistics. The filling out of the blanks required by the State Board of Health should be the duty of the local health officers, instead of school clerks as now. Vermont was one of the first ten States to adopt measures for satisfactory compilation of vital statistics; but Vermont has not yet sufficiently provided for their publication and distribution. In comparing statistics it is necessary that there be a uniform system. There is now a movement toward this, and Vermont and Michigan were the first to adopt the plan.

Dr. J. H. McCollum of Boston read a paper on prophylaxis in contagious diseases. The germ theory, he said, was now thoroughly established; hence the importance of bacteriology, now the most important of medical studies looking toward the eradication

of disease. Dr. McCollum treated exhaustively the subjects of various contagious diseases. Of cholera he said that it is mildly infectious; it is most often communicated through the water supply by means of the alimentary canal; its germs do not readily live in the air. Isolation and disinfection are the best weapons against it. Typhoid is often transmitted by milk, more often by water. Chloride of lime is a good disinfectant. Yellow fever is not spread by personal contact. Recent experiments seem to show that it is conveyed only by mosquitoes. Mosquitoes may be got rid of by drainage and disinfection of their breeding places with kerosene. This is also true of malaria, diphtheria and scarlet fevers, which are especially apt to spread in public schools, hence schools should be thoroughly inspected by the proper officers. Small-pox is best controlled by vaccination. Too much care cannot be taken in disinfecting for all contagious diseases.

Dr. B. H. Stone of Burlington read a paper on the value of blood examination. The science was too recent, he said, to be correctly measured. It is, however, of immense value in diagnosis. Some progress has been made toward the discovery of the nature of immunity. The serum reaction is almost conclusive in identifying typhoid. The value of this branch of the laboratory work cannot be overestimated.

Dr. M. J. Wiltse of Burlington read a paper on the Value of Our Laboratory to the People. He especially requested that specimens for analysis be sent in good faith, and be accompanied with all available data. Extracts were read from a large number of letters from State's attorneys, health officers and others complimenting highly the character of the work done in the laboratory. Its work in the medico-legal field has been important, and has been a great financial saving to the State. Aside from this, its value in detecting contagious diseases, contaminated water, and other sources of ill health cannot be measured.

In connection with the value of the State Board of Health, Dr. C. S. Caverly said that for the five years prior to the establishment of the State Board of Health the average number of cases of scarlet fever per year was 60.6; for the last five years (1895-1899 inclusive, or since the establishment of the board) it was only 26; a reduction of 56.6 per cent. Of diphtheria for the first period the number of cases per year was 191.2; for the second, 94.2; a reduction of 50.7 per cent. Of consumption, first period, 749.4 cases per year; second period, 511.4; a reduction of 31.7 per cent. Of whooping cough, first period, 31 cases per year; second period,

21.4 cases; a reduction of 31 per cent. Of typhoid fever, first period, 168 cases per year; second period, 105.8; a reduction of 37 per cent.

Drinking Water.

At the evening session of the first day, Prof. W. T. Sedgwick of the Massachusetts Institute of Technology gave a very interesting lecture on drinking water and disease, with stereopticon illustrations. The first disease traced to drinking water, he stated, was cholera. Since then contaminated water has become recognized as one of the great sources of disease. The speaker traced the history of the great outbreak of cholera and typhoid in London, Plymouth, Lowell, Lawrence and Chicago; and from those cases deduced the fact that filth alone will not originate a contagious disease, such as typhoid, but that the water must be infected by the specific germ of the disease. Running water does not, he said, in spite of the popular belief, purify itself; but stagnant water will do so in time. The fact that water tastes well or ill is not a certain proof of its healthful or unhealthful quality. It was the speaker's opinion that country wells are less frequently dangerous than is believed. Filtration, he said, through five feet of sand would make even sewage water safe to drink. Hence the water that filters into deep wells is usually safe; still, too much care cannot be exercised. We want in drinking water innocence, not repentance.

Especial care should be observed that surface water does not have access to the well. The water supply system now in construction for the city of Boston was outlined.

The proceedings of the second day were opened with an address by Col. Joel C. Baker of Rutland, on the

Laws Relating to Public Health.

The ten commandments were not older, he said, than sanitary laws. Every civilization has recognized their necessity, but the more complicated condition of modern life renders them still more obligatory. The State has a right to enforce such laws even to the point of interference with personal and property rights, provided always that they subserve the interest of the public health. Every man owes a duty to society not to imperil the life and health of others; the observance of the duty it is the right of law to enforce. The State Board of Health is a most important factor in the commonwealth; but it should have greater power of enforcing its regulations in all cases. It has this power in case of contagi-

ous diseases, and under this limitation its acts are as valid as legal enactments. It is sometimes claimed that no legislative body can thus give law-making power to any other body. This is not true, as all police legislation recognizes. In the regulations adopted by the State Board of Health their power is overstepped in one point, where they assume to define a nuisance. This is beyond their duty. The rule by which health officers must in general be governed is that their acts must be appropriate to the purpose of the board—*i. e.*, must subserve public health directly. Whether any individual act is or is not so appropriate is a question that the judicial courts must decide. Life and health are the most important objects of legislation, and the laws that govern them cast an obligation on all members of society.

Following Col. Baker's paper a discussion of the points involved was indulged in. Hon. D. J. Foster presented his compliments to the school, complimenting its work, and expressed regret that an imperative engagement made it impossible for him to enter into the discussion.

In response to a question, Col. Baker rendered the following opinion on Section 1678 of the Vermont statutes that local health officers have the authority to abate nuisances against public health without the sanction of the local boards of health, and that it is their duty to abate such nuisances even if the selectmen or village trustees order otherwise; and further, that in directing the removal of such nuisances a fixed time must be set before which the order must be carried out by the person responsible.

Dr. H. L. Stillson of Bennington followed with a paper on the duties and responsibilities of health officers. Not every one, he believed, was fitted to be a health officer. That official needs experience, training, and special education. He must know much of law, medicine, practical physics, engineering and human nature. His duties are imperative, and his responsibilities extend to the entire people. He must face all emergencies, know what to do, and dare to perform.

Dr. W. N. Platt of Shoreham, on sanitary legislation. All sanitary law, he stated, to be effective must be in accord with public sentiment. In this Vermont is among the first. No other State has an absolutely free State laboratory, nor has vested so wide powers in the State Board. Health officers should have better instruction. To this end why should not the University of Vermont give a course leading to a degree in medical sanitation?

Vermont also needs an institution for the free treatment of tu-

berculosis. There is a call for greater expenditures on public health than on criminology. Complete isolation of contagious diseases was recommended.

The afternoon session was almost wholly occupied with an elaborate paper on the Relation of Animal Diseases to Public Health, by Don D. Grout of Waterbury, and the discussion thereon, which we purpose publishing in full in our next number. In the discussion of this paper, Dr. C. W. Peck of Brandon spoke vigorously on the subject of the prevention of the spread of tuberculosis. Progress had been made in Vermont, but things are still done that are far from perfection. Sale of diseased meat and milk is winked at, and the question is in order, "What are you going to do about it?" Cattle are brought untested into the State, and farmers continue to poison the public with diseased food. It may not be the fault of the cattle commission, but some one is to blame. The Legislature have not yet done their full duty in the matter. Too many rural members are indifferent. Dr. Peck cited several cases of flagrant violation of health laws to uphold his statements, and then introduced the following resolutions, which were adopted:

Whereas there exist at the present time thousands of cases of tuberculosis in the lower order of animals which can be and doubtless are communicated to the higher order, and whereas we believe this unnecessary destruction of human life may be largely, if not entirely, arrested by proper laws, faithfully enforced; therefore

Resolved, That it is the duty of all members of this association, as well as of all good citizens of the State, to do all within their power to arrest this needless and unnecessary destruction of human life; and it is further

Resolved, That in order to accomplish the above stated object it is necessary for the State, either through its State Board of Health or otherwise, to put in the hands of the people, either by pamphlet or otherwise, such facts as will tend to educate the people upon this vital question of self-preservation; and it is further

Resolved, That it is the duty of the State of Vermont to make and rigidly enforce such laws as shall protect all consumers of farm and dairy products which may possibly convey poisonous germs; and it is further

Resolved, That it is the sense of this meeting that the State Board of Health be instructed to publish and place before the people of this State such a report of this meeting as shall in their judgment most enlighten them upon the various subjects here discussed.

Edgar B. Moore of Rutland then spoke on the subject of Milk Supplies. He said that the motto should be: "Agitate and Educate." In inspecting dairies in line of his duties, he found bad conditions; crowded, dark, damp stables, and all sorts of uncleanliness. The best weapon against this was publicity, and the consequent public demand for better conditions. To such a demand the farmers and dairymen must submit. Teachers of domestic science should be put into our schools to forward the work of sanitary education. As soon as people demand better conditions they will get them.

In the discussion of the last paper, Dr. P. P. White of Williamsville urged the local health officers to advise the use of the tuberculin test. Dr. G. G. Marshall of Wallingford and others further emphasized the necessity of better sanitary conditions as affecting the milk and meat supply. Dr. Grout stated that if "bob veal" was shipped because a health officer did not dare do his duty, that officer had better resign, or else get more courage. Mr. Stillson seconded Dr. Peck's resolutions, saying that if the public knew the real conditions he believed excitement would rise to the rioting pitch. The resolutions were unanimously adopted.

The evening session was occupied with the discussion of smallpox, and the needful measures for its suppression and prevention —all of which resolved itself into vaccination, *vaccination* and *revaccination,* voluntary if practicable, but compulsory if not otherwise practicable.

The third day's sessions were for the most part occupied with the discussion of the subjects submitted during the two previous days, eliciting much information of practical utility to the assembly of health officers present.

DUTY is above all consequences, and often, at a crisis of difficulty, commands us to throw them overboard. *Fiat justitia, pereat mundus.* It commands us to look neither to the right, nor to the left, but straight onward. Hence every signal act of Duty is altogether an act of Faith. It is performed in the assurance that God will take of the consequences, and will so order the course of the world that, whatever the immediate results may be, His word shall not return to Him empty.—Anon.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

Eighteenth Annual Meeting, held at Niagara Falls, N. Y., June 1, 2 and 3.

From Report of "American Medicine," June 15, 1901.

When the Climatologists were assembling the falls were enveloped in a dense fog, and the weather conditions for some time previous had been such that the natives were not so much disposed as they might otherwise have been to put forward the claims of the place to be regarded as an ideal holiday or health resort, at all events in the spring or early summer. On the other hand, it was noticeable that though the members of the association had come from all parts of the country, they were singularly reticent about the kinds of weather they had been having recently in their respective homes, the inference being that on no quarter of the continent has there lately been much to boast about in this respect. A tacit understanding seemed in short to have been arrived at to ignore the concrete actualities and to deal only in generalities with regard to the elements.

Of course, the battle royal of the congress was waged, as it has been on many previous occasions, over the vexed question or questions as to what and where is the best climate for the treatment of tuberculous patients; but before it was entered on there were a number of affairs of outpost, which had the double effect of putting the combatants in good training and of warming them to their work. The president, Dr. Robert H. Babcock (Chicago) directed the exercises with decided skill and with an evident appreciation, not to say relish, of the different phases of the conflict. At the outset he cleared the way by delivering a presidential address which defined clearly and accurately the ground on which they were met, at the same time that he hinted at some of the points on which there was a difference of opinion. Taking as his particular theme the limitations of medicinal therapeutics, he showed that, while all good drugs were useful in their particular spheres, and some like quinine and mercury had claims to be regarded as specifics and at all events could not be done without, he pointed out that there was more and more tendency on the part of the most enlightened members of the medical profession to pay attention to the general health of their patients and, with a view to this, to call in the aid of natural agencies as far as possible. The influence of climate, life in the open air, the use of water in various

ways, exercise, diet, and other things now receive more attention than they had done, and it was well that they should do so, if only, but not principally, for the reason that the general public had revolted against the excessive use of drugs and called for a greater reliance on the resources of Nature's laboratory—exaggerated manifestations of which were found in the growth of bodies like the Christian Scientists, Faith Curists, Kneippists, etc. Simultaneously with this outbreak of therapeutic nihilism, it was true that a new era was being opened up by the discoveries of what could be done by means of antitoxins, and serotherapy, and organotherapy generally; but this was no reason why skilled physicians should neglect natural agencies and leave the rich field to ignorant empiricists. Proceeding to speak in more detail of hydrotherapy, he reminded his hearers of the belief that the Romans had in baths, and after remarking that though their utility had been lost sight of with many other good things in the Dark Ages, the therapeutic value of water again commenced to be recognized in the seventeenth and eighteenth centuries, and now they could say in regard to it, that it not only was the only remedial agency that had stood the test of time, but that it stood higher now than it did 2,000 years ago. The activity of the last 30 years in the study of bacteriology had given rise to the belief that every disease was due to some sort of microbe, but they now knew that there must be some additional factor besides bacteria. In other words, there must be a condition of the body that afforded a good culture medium, otherwise the bacteria would not thrive. They might speak of it as susceptibility to particular diseases, or say that the power of resistance was slight, or that a person's vitality had become low, but it all meant the same thing, and showed the importance of observing the general laws of health. The physician was behind the times who depended entirely on medicines; they must make intelligent dual use of medicinal and natural agencies.

The reading of papers was then proceeded with, the first being one on the Climate and Diseases of Puerto Rico, by Dr. Charles H. Alden, formerly Assistant Surgeon-General, U. S. A. Having shown that the diseases most prevalent in the island were largely due to bad sanitary arrangements, he recounted the good that had been accomplished since it came under the jurisdiction of the United States, particularly in respect to small-pox, which previously had been very much neglected, and was consequently very common, but which through the agency of vaccination had rapidly diminished and almost entirely disappeared.

The Fevers of Florida were then reported on by Dr. Frank Fremont-Smith (Palm Beach) who, admitting that his experience had been confined to one or two of the larger cities on the coast, adduced figures to show that there was nothing to be particularly alarmed at as regarded either the number of patients who suffered from fever, or the severity of their attacks, but quite the reverse, there having been only a small number of cases and some of these having evidently been imported. Casual references he made to "mountain fever" caused several speakers to protest against the use of that term, and the reader of the paper said he only used it with the understanding that it meant typhoid contracted in the mountains. Dr. John L. Heefron (Syracuse, N. Y.) said he had heard that it was impossible to get the words "typhoid fever" out of Florida by telegram, and an attempt that he had made to get them into the State had certainly failed; a telegram he sent when one of his patients was attacked with fever there having failed to get delivered. Dr. Fremont-Smith assured the doctor that this must have been due to accident, as there was no such conspiracy as was suggested to prevent the use of the words in reference to Florida.

The Climatology of Augusta, Ga., was next discussed in a paper by Dr. Thomas D. Coleman, of that city. He drew a distinction, however, between the city proper and the elevated suburb of Summerville, on the site of which he admitted that it would have been well if the whole of Augusta had been built. Summerville, he added, was built on a hill of sand, had excellent drainage, enjoyed a pleasant climate free from sudden changes, and was altogether a very suitable place for tuberculous and other patients. Apologizing for the want of some statistics, he said he understood that it was not considered necessary to keep mortuary records in Summerville.

Remarks on the Climatic Influences of Newport, R. I., by Dr. W. C. Rives (Washington), and a paper on Nantucket and the Ocean Climate, by Dr. Harold Williams (Boston), gave rise to an exchange of courtesies between these gentlemen. Among the principal advantages claimed for the climate of Newport by Dr. Rives were its coolness in summer and mildness in winter. These he attributed to the prevailing winds and the Gulf Stream. He admitted that the winter was not good for consumptives, but said he would prefer it to other parts of the New England coast. Dr. Williams inquired the authority for the statement regarding the effect of the Gulf Stream; his impression was that that stream did

not come within 300 miles of Newport. Dr. Rives said the temperature of the water was undoubtedly warmer than at Cape Cod, and it seemed reasonable to attribute this to the Gulf Stream, as was done in a paper by Dr. Storer. Dealing with Nantucket, Dr. Williams said its climate resembled that of the ocean more nearly than that of all other Atlantic resorts, with the possible exception of Atlantic City, and for the reason principally that it was further out to sea than any of the rest. Dr. Rives asked whether a few years ago the death-rate from tuberculosis in Nantucket was not the highest in the State. Dr. Williams explained that fact by saying that the population was very much reduced some time ago by the abandonment of certain industries, causing a great number of people to go elsewhere. Many of these, however, came back to Nantucket to die.

Notes on the Climate of New York and New England were given in a paper by Dr. Guy Hinsdale (Philadelphia). He said the peculiar changeableness of the climate of this region was due to the fact that it was the meeting ground of two storm tracks. The cyclones from the Great Lakes and the storms that moved along the coast from the South met in New England. Cyclones were not to be confounded with tornadoes, the element of extreme violence not being involved in them. It had been said that New England was the exercise ground of the weather, and that as a consequence a New Englander was a person who was always about to be warm and comfortable. Still that, as Charles Dudley Warner said, was the sort of stuff of which martyrs and heroes were made. The speaker proceeded to give interesting details of records he had kept of the climatic conditions, with particular reference to the coast of Maine, which was free from some of the disadvantages alluded to, and mentioned that when his paper was published it would be found to contain some notes in regard to the great blizzard. A remark he made to the effect that it was a mistake to suppose that the prevailing wind in Boston was from the East was confirmed by other speakers, and Dr. W. F. R. Phillips, of the Weather Bureau at Washington, made the official statement that Boston has in reality two prevailing winds—southeasterly in summer and northwesterly in winter. The reason for the popular error, it was suggested, was that when the wind did blow from the east it produced such an effect that its impression was not easily forgotten.

In a paper entitled Some Observations on Southern California, Dr. Samuel A. Fisk, in spite of the fact that he hails from Denver,

Col., gave a glowing account of the pleasure and benefit he had derived from a trip to the lower part of the Pacific Slope. Contrasting the climates of the two regions, he said that Colorado was stimulating, while Southern California was soothing; both were good for invalids, though at different stages and under different conditions. Dr. Norman Bridge (Los Angeles) read a paper on the same subject. He remarked that Southern California was the paradise of the old and of children, and that tuberculous patients usually did well there. It was a question whether intense dryness of atmosphere was as important as had generally been assumed. The quality of climate they required for tuberculous patients was one that enabled them to live largely in the open air, and that was the kind of climate they had in a marked degree in Southern California. Several of the Colorado doctors present referred to patients who were in the habit of coming from Southern California to Colorado for tonic effects, and one said that if patients were going to try both climates, he would advise them to try Colorado first. In replying on the discussion, Dr. Fisk said he went to Southern California a consumptive and he came back cured. He was loyal to Colorado, but as some cases did better there than elsewhere, so other cases did better elsewhere than there.

The Proper Definitions of the Terms Usually Applied to Tuberculosis to indicate stages of advancement of the disease and results of treatment, were discussed in a paper by Dr. J. Edward Stubbert (Liberty, N. Y.), who gave illustrations of the different meanings that were attached to the following: (1) Pretuberculous or prebacillary stage; (2) incipient stage; (3) moderately advanced stage; (4) far advanced stage; (5) improved condition; (6) arrested condition, and (7) cured or apparently cured condition. He pointed out among other things that the pretubercular stage was not recognized by many authorities, that the other terms were all used with different meanings, and that there was a complete absence of agreement as to the conditions under which and after what lapse of time a patient could be pronounced cured. After discussion it was agreed to appoint a committee of five to draw up definitions of what the members of the association should agree to understand by the terms in question or others that might be decided on. The selection of the committee was left to the president, and he subsequently announced the appointment of the following: Dr. Charles E. Quimby, New York; Dr. F. I. Knight, Boston; Dr. James C. Wilson, Philadelphia; Dr. Edward R. Baldwin, Saranac Lake, N. Y., and Dr. J. E. Stubbert, Liberty, N. Y.

Tuberculin Tests was the next subject brought to the notice of the association, Dr. Edward O. Otis (Boston) reporting the results of further tests he had made, and Dr. W. E. Casselberry (Chicago) reading a paper in which he described the cases in which he thought the test seemed justified and decisive. The discussion which followed showed the general opinion to be favorable to further experimentation with tuberculin, and also with other substances which were reported as giving similar reactions. The fact that syphilis sometimes responded in the same way as tuberculosis was considered only an additional reason for pursuing the investigation further.

Dr. R. G. Curtin (Philadelphia) reported two cases of Aneurysm of the Heart, and one of Spontaneous Rupture of the Heart, and the proceedings of the first day were brought to a close by Dr. Sherman G. Bonney (Denver) reading a paper on The Influence of the Colorado Climate upon Pulmonary Hæmorrhages.

SECOND DAY.

The second day's proceedings were devoted almost exclusively to the consideration of questions connected with the treatment of tuberculosis. Before this subject was reached, however, there was an interesting discussion on the question raised by Dr. F. I. Knight (Boston), The Association of Tuberculosis and Syphilis—is it always injurious, or does one disease exert an inhibitory action upon the other? Dr. Knight mentioned that, having had his attention directed to the subject, he looked into the literature, and came across very conflicting opinions, one being that syphilis predisposed a person to tuberculosis and aggravated the disease, and another that it might in the course of time be found desirable to make use of a vaccine of syphilis in order to save the people from tuberculosis. The matter was of great importance, on account, among other things, of the difficulty in some cases of diagnosticating between the two diseases and the impression which prevailed that antisyphilitic treatment was apt to complicate tuberculosis. He had never himself found antisyphilitic treatment to have this effect, and, indeed, had had cases where its effect or that of the syphilis was to make the tuberculosis symptoms disappear. Rheumatism and some other diseases were recognized as being antagonistic to tuberculosis. Might not this also be true of syphilis? All the speakers who took part in the discussion agreed that the subject was deserving of further investigation. A Case of Mechanical Obstruction of a Bronchus Simulating Rapid Tuberculosis was

then described by Dr. J. B. Walker (Philadelphia); and Dr. Thomas W. Harvey (Orange, N. J.) gave an account of A Case in which a Piece of Meat in the Bronchus Disappeared by Apparent Absorption, followed by the recovery of the patient.

The symposium on tuberculosis was introduced by a paper on the Selection of Favorable Cases of Pulmonary Tuberculosis for Sanatorium Treatment, by Dr. E. R. Baldwin (Saranac Lake, N. Y.) In no other disease, he said, was it so difficult to make a prognosis, many cases that were regarded as incipient being really incurable, while others that were apparently far advanced might be cured. This showed the necessity of coming to a better understanding than now existed as to how cases should be classified, and he submitted a scheme (which he explained in some detail) not with the belief that it was perfect, but in order that the members might have something to work upon. Under the present system or want of system a great deal of harm was done—on the one hand by patients who were thought to be only in an incipient stage being given extravagant promises of speedy improvement or recovery, and on the other hand by the stamp of "incurable" being put on those who, in spite of the fact that the disease appeared to have reached an advanced stage, might be cured, or at all events much improved. Apart from such considerations, the success of State and municipal or semi-charitable sanatoriums required discrimination in favor of curable cases. Economic reasons, indeed, compelled it at present, the interests of the curable necessitating the exclusion of very ill patients. Separate provision, he contended, should be made for the latter, because of the impossibility of which he had spoken of determining prognosis. Probably many years would elapse before adequate provision was made for all classes, and until such a time had arrived encouragement should not be given for obviously unfavorable cases to apply for admission, as refusal meant incurability in the eyes of the patient and his or her friends. The factors that might be considered as favorable, doubtful or unfavorable in prognosis were tabulated in his scheme, which he admitted could not apply to every case, though he thought it might aid in the selection of cases.

The next paper was by Dr. Charles L. Minor (Asheville, N. C.) and dealt with the carrying out of the hygienic treatment of tuberculosis outside of sanatoriums. He had no wish, he said, to belittle the work that was being done in sanatoriums, but much could also be done at the residences of patients in health resorts like Asheville. Many patients did not care to go to sanatoriums,

and in selecting a place to send such patients to, the doctor could not be too careful in studying the local conditions and also the circumstances of the patient. Pure air and pleasant natural surroundings were of the utmost importance, but these would not atone for bad cooking and a cheerless house. The character and habits of the patient had also to be studied, as had likewise his family and business relations; the object being to place him, as far as possible, in a position where he would be free from anxiety and worry. For much of this it was necessary to depend on the family physician. When the patient came to a resort it was incumbent on the doctor having charge of his case to impress on him how largely his progress toward recovery or otherwise was in his own hands. It was well to be candid with the patient up to a certain point, the revelation of the whole truth, though not always desirable, being almost always better than concealment. Then they should proceed to build up the system by means of food and exercise, light and air, the patient being requested to keep a record of his symptoms and daily life, but at the same time instructed not to speak to any one but the doctor of his ailment.

Dr. Irwin H. Hance (Lakewood, N. J.), who had the next place on the programme, dealt with practically the same phase of the question, the title of his contribution being The Home Treatment of Tuberculosis. He said that what was most desirable was the means of extending to the masses the advantages that the few got in sanatoriums, and this was found in localities where the patients could have plenty of fresh air, good food, and rest. He also attached much importance to baths, rubbing, etc.; medicines played only a secondary part in the treatment of such patients. It was a question in his mind whether the prevailing idea that climatic change was necessary in the treatment of tuberculosis had not had a retarding effect. At all events, for the great majority of people, what they ought to aim at discovering was how they could be best treated at a distance not too far from their homes. Dr. Charles Fox Gardiner (Colorado Springs), who read the next paper on the list, insisted on the other hand on the Importance of Early and Radical Climatic Change in the Cure of Pulmonary Tuberculosis. He dwelt also on the advantages of high altitudes, and expressed the belief that more patients were cured in boarding houses in Colorado than in sanatoriums in damp climates. No doubt the best of all results were those that could be obtained by the advantages of climate and sanatoriums combined.

Dr. Arnold C. Klebs (Chicago), speaking on the selection of a

proper locality for the treatment of tuberculous patients, reminded the meeting how first warm temperatures and then cold temperatures, dry climates and ocean voyages—in fact, every variety of atmospheric elements have been recommended for this disease. The conclusion at which he had arrived was that there was no climate, any more than there was any drug, that suited all cases. In spite of the discovery of the bacillus of tuberculosis, they still knew little of the disease, and he was not sure but the discovery of the bacillus had delayed rather than advanced cures, all the attention being directed to the bacillus and the body itself being neglected. In other words, the bacillus occupied a prominent position among bacteria to the detriment of suffering humanity. Among the objections to climatic change were the expense and the worry it was likely to give a patient if he could not well afford it, homesickness, the fact that the physicians who recommended a change did not know much about the conditions and climates of different places that were supposed to be good for such patients, and above all, the fact that so small a proportion of patients who went to other climates were ever able to return home without having a recurrence of the disease. Condemnation of the climatic treatment might seem radical, but he was looking at the matter from the point of view of the masses, and he did not hesitate to say that what they required was some place not too far from their homes, where they could get fresh air and sunshine, comfort and good food.

Dr. Vincent Y. Bowditch (Boston), in discussing the papers, referred to the vagueness of terms that were used and the absence of proper data for making accurate comparisons. The results, however, obtained in New England had justified them in changing their views to the extent of believing in the curability of a large number of cases in local sanatoriums. At the same time it must be acknowledged that each case must be treated individually, and that the treatment must be regarded as experimental. Merely sending patients away haphazard to climates that were supposed to be beneficial to such cases was not satisfactory. He believed that better results could be obtained in the West than in the East. Nevertheless they required sanatoriums in every locality where tuberculosis prevailed.

Dr. E. O. Otis (Boston), while admitting the advantages of climatic change, said it was sometimes a question whether they were not too dearly bought, especially when a patient had to be acclimated twice over, first, say, in Colorado and then on his return home to New England or elsewhere. It was no longer recognized

that climate was the whole or primary consideration in the treatment of the disease. A revelation had been made within the last few years of what could be done at home, by means of sanatoriums and otherwise. Comparing the treatment in sanatoriums at home with the treatment without sanatoriums in more favorable regions, he questioned whether the advantages of climate in the latter counterbalanced the advantages that were derived from the sanatoriums. Patients cured at home were more likely, in his opinion, to remain cured.

Dr. Fisk (Denver) said that after all it could not be gainsaid that a strong line of demarkation was drawn by the pocket-book of the patient. What was most desirable was to get the best climate and the best home at the same time. There was little use in a man going to a good climate and starving himself or living in a damp room.

Dr. S. G. Bonney (Denver) regretted the tendency that existed in some quarters to minimize the importance of climate. At the same time he fully agreed to the proposition that the best results could not be got without a combination of climate and an appropriate system of daily life. Local hospitals were required everywhere for the hopelessly ill, who were a source of great danger to the rest of the community.

Dr. S. E. Solly (Colorado Springs) remarked that if he had his way he would have every patient go into a sanatorium first, not necessarily to remain there long, but for observation. The way that home doctors sent patients to Colorado and elsewhere for treatment showed that they did not know enough about them. A short residence in sanatoriums would enable the patients to be classified and an intelligent idea formed of the climate and treatment that would benefit them. He still believed in the value of climate, and said that if a patient were cured in a good climate the good effects would remain to the same extent as if he had been cured elsewhere.

Dr. James A. Hart (Colorado Springs) agreed with the statement that no drug or climate was a specific. The ideal treatment was one combining climatic benefit with hygienic conditions. Removing patients fifteen miles or so from their homes and putting them on regular diet and giving them fresh air, exercise and other things was a step in the direction of giving tuberculosis patients what they would get if they went to the Rocky Mountains.

The chairman remarked that he was glad to see so much general agreement in favor of open air, with proper exercise and good

food regimen and rest. Doctors had too long relied in such cases on tonics and cough mixtures. It was not medicinal therapy that was needed; it was the proper regulation of the patient's daily life.

Dr. C. F. McGahan (Aiken, S. C.) said it was undoubtedly better that patients should have fresh air and good food at home than that they should be sent to a health resort and put in a cheap boarding house. There were many people, however, who could not endure the discipline of a sanatorium, and who, if they could afford to go to a health resort, might be educated to the point of following a regular course of home treatment.

Dr. Albert C. Getchell (Worcester, Mass.) observed that an incidental advantage gained from the sanatorium was that the patients who spent some time there assisted on their return home in educating the public. In this way they were assisting in a work that ought to be much more systematically entered on, having for its end the stamping out of tuberculosis.

In the course of further discussion, Dr. R. G. Curtin (Philadelphia) said there could be no doubt that, while there was a great deal in climate, a great deal could likewise be done at home. The difficulty was to get patients to carry out the instructions given them.

Dr. James C. Wilson (Philadelphia) was disappointed that he had not heard more about the treatment of patients in their actual homes. Most of what had been said had related either to treatment in sanatoriums in the locality of their homes or treatment out of sanatoriums in other places where the climate was more favorable. It should not be overlooked that in many places, Philadelphia among them, good results had been obtained by getting the patients to carry out regular regimens in their own houses. He thought that municipalities ought to be urged to do more in the way of providing local hospitals.

The readers of papers having replied, the discussion was brought to a close. On the motion of Dr. H. L. Elsner (Syracuse, N. Y.) a motion was adopted in support of the principle of the State care of the tuberculous poor.

THIRD DAY.

Business Meeting.—The election of office-bearers resulted as follows: President, Dr. Samuel A. Fisk, Denver, Col.; vice-presidents, Dr. Norman Bridge, Los Angeles, Cal., and Dr. W. F. R. Phillips, Washington, D. C.; secretary and treasurer, Dr. Guy Hinsdale, Philadelphia, Pa., re-elected; member of council, Dr.

Robert H. Babcock, Chicago, Ill.; representative of Congress of Physicians, Dr. F. A. Knight, Boston; alternate, Dr. R. G. Curtin, Philadelphia. It was decided to hold the next meeting at Coronado Beach, San Diego, Cal., on or about the first of June and the following days. After discussion it was agreed to limit the membership of the association to 150. Eleven new names were added to the roll.

A paper was read by Dr. C. C. Ransom (New York) on Clinical Aspects of Spa Treatment, and a communication on the same subject was received from Dr. Beverly Robinson (New York) and ordered to be included in the transactions. Dr. Boardman Reed (Philadelphia) contributed a paper on The Hygienic and Mechanical Treatment of Heart Disease, and Dr. Guy Hinsdale (Philadelphia) followed with one on Analogous European and American Mineral Springs. These papers were all discussed together, and the importance of the work of investigation started by Dr. Hinsdale being recognized, a committee consisting of that gentleman and Dr. Albert C. Peale (Washington) and Dr. Ransom (New York) was appointed to carry it on.

Among the other papers on the programme, several of which were read by title in consequence of the absence of the authors, were: Devitalized Air Toxemia a Prime Cause of Tuberculosis, Dr. Charles Denison (Denver); The Relation of Sunshine to the Prevalence of Influenza, Dr. Howard S. Anders (Philadelphia); A Case of Pulmonary Osteoarthropathy, Dr. R. C. Newton (Montclair, N. J.); The Physiologic Influence of Climate on Nervous Diseases, Dr. F. Savary Pearce (Philadelphia); The Use of Strychnia in Diseases of the Heart, Dr. Abraham Jacobi (New York); The Cause of Death in Aneurysms of the Thoracic Aorta which do not Rupture—Report of Two Cases, Dr. H. D. Arnold (Boston); The Etiology, Pathology and Clinical Aspects of the Bovine Heart, Dr. Leonard Weber (New York); A Case of Chronic Endocarditis, Dr. Judson Daland and Dr. W. D. Robinson (Philadelphia); The Increased Corpuscular Count of the Blood at High Altitudes, Especially in Rapid Ascent, Dr. W. A. Campbell (Colorado Springs); The Use of Guaialine in the Treatment of Pulmonary Tuberculosis, Dr. W. W. Bulette (Pueblo, Col.); and Note Upon the Shifting of Apparent Gastric Pain into True Angina Pectoris, Dr. Glentworth R. Butler (Brooklyn).

MORE ABOUT THE CANTEEN, AND THAT "UNANIMOUS" VOTE OF THE AMERICAN MEDICAL ASSOCIATION.

From "The New Voice," June 27, 1901.

Syracuse, N. Y., June 18.—"The Post-Standard" of this city has just published an interesting letter from Dr. H. D. Didama, one of the leading physicians of New York State, and the dean of the Medical College of Syracuse University. The letter was called forth by the publication of numerous reports concerning the adoption of the pro-canteen resolution by the American Medical Association. Dr. Didama says:

"A statement has been published in a multitude of newspapers throughout the United States and elsewhere that the American Medical Association, at its recent meeting in St. Paul, adopted unanimously a resolution requesting Congress to restore the canteen. Many of the papers iterated and reiterated their approval of the action of what they were pleased to call this great association of eminent physicians and surgeons.

"Permit me to call attention to the actual occurrences preceding and attending this so-called unanimous action.

"At a meeting of army surgeons, mostly veterans, held at St. Paul just prior to the assembling of the National Medical Association, a resolution was offered urging Congress to restore the canteen, or 'post exchange.'

"After one of the delegates had made a very vigorous speech, in which he declared that not more than five per cent. of the soldiers of the United States army were abstainers from the use of alcoholic beverages, the resolution was adopted, and a committee appointed to solicit the Medical Association to join in their request to Congress.

"At a general meeting of the Association, *when a majority of the 1,500 members were present*, the soldiers' committee appeared and had their resolution presented. A speech in advocacy of the canteen, commenced by one of the soldiers, a member of the Association, became so violent and abusive that it was suppressed by the clamor of the convention, and the resolution was not adopted, but referred to a legislative committee acting in Washington.

"The canteen advocates, determined to secure a decision in their

favor, rallied their forces the next morning, *when not more than fifty members of the Association were present*—the rest being at work in the various sections—and secured an affirmative vote, which the president declared unanimous, although he did not put the negative. This vote, secured by trick, was the heralded unanimous action of the great American Medical Association.

"And now, Mr. Editor, will you kindly permit the presentation of some personal views concerning a subject which has attracted attention and is still causing discussion throughout our country?

"The advocates of the canteen claim that when the soldiers could buy wine, beer and other 'soft drinks,' there was little or no drunkenness, but that now, since the abolition of this great temperance promoter, the men resort to outside saloons and buy whisky, as well as beer, and go to pieces.

"It is well enough to remember that the active principle in the soft drinks is identical with that in the strong ones. Whisky contains an indefinite amount of alcohol, from 20 to 40 per cent. Beer ranges from 4 to 8 per cent.; claret, 9 per cent.; champagne, 11 per cent.; tokay, the favorite prescription of some physicians, 12 per cent.; port, 18 per cent., and sherry, another soft drink, 22 per cent. People can and do get drunk on any one of these beverages. And a high medical authority holds that beer, rather than whisky, is the cause of certain forms of uræmia.

"The canteen is the primary school, the kindergarten for the saloons. Many a new recruit tasted alcoholic beverages for the first time in the canteen. The taste acquired there led him with boon companions to the grog shop.

"And now may I ask that you will publish the statement of one who knows what he is talking about, and is not afraid to say it, Colonel Ray, the Commandant of Fort Snelling, near St. Paul.

"Yours earnestly,

"Syracuse, June 15. H. D. DIDAMA."

To this letter Dr. Didama attaches the statement given out by Colonel Ray, the Commandant at Fort Snelling, previously published in "The New Voice":

"It is an insult to every officer in the United States Army to say that the army canteen assists in the management of his men. If I had an officer under me who had made this statement, I would certainly relieve him as soon as possible.

"There are people and newspapers hereabouts that tell lies about myself and my post, and the lies are all in favor of the army can-

teen. I do not see what actuates this sentiment in favor of the canteen. I have searched long to find out what motive the wholesale liquor dealers could have in favoring the re-establishment of the canteen. Their reason must be that, in connection with the liquor they sell to the United States, they have no license to pay, no saloonkeepers to hire, and are always sure of their money.

"What was said at the medical convention in regard to the canteen was disgusting. I can run my post as well, if not better, without a canteen as I can with one.

"Here is a fact that has been overlooked in this argument: The regular canteen is not allowed to sell liquor to soldiers when they are drunk. Therefore the men who want to get drunk will go uptown anyway. A canteen that keeps the men at the post will have to be as low and vile a hole as any saloon in town. If the canteen is what it was first intended to be, it does not keep these drink-soldiers, about whom so much has recently been said, at the post. They want to go somewhere where they can get drunk.

"There is no need of liquor in any army post in the country. Do they have a bar at your newspaper office in order to regulate the drinking of reporters and editors? In your department stores, is a bar maintained simply because a clerk here and there is liable to leave his work, go outside of the store and get drunk? The statements that are being made about the army and its drinking propensities are libels."

With such evidence, for no one who knows Dr. Didama will question his statement or the facts as stated by Col. Ray, it hardly seems probable that Congress will hastily reverse its action of last winter. Moreover, such action appears the less likely for the opinion of General Miles, who is reported to have said, in an interview at Buffalo, June 14, 1901 ("The New Voice," July 4th):

"I don't believe the present law should be repealed until it has been given a fair trial. There has been a great deal of idle talk concerning the canteen. The army canteen, or exchange, or amusement room, as it is variously called, was at first simply a place where soldiers might congregate to play games and amuse themselves. The sale of liquor was not allowed. The last act of Congress places the institution back on the old footing. I am not sure that Congress has made a great mistake in again prohibiting the sale of liquor. Our large manufacturers don't find it necessary to provide places where their employees can congregate and drink. The railroad companies don't. There is very little drinking among railroad men, and they seem to get along just as well."

VEGETARIANISM AND EVOLUTION.

An attempt to deal with vegetarianism from the standpoint of modern science, both historically and physiologically, is made in a recent paper by Prof. Ferdinand Hueppe. He considers that geological evidence proves that the cradle of primitive man was in a northern land, and fixes his evolution in the tertiary period when Asia was still partly separated from Europe, but connected with Africa and united with America by a land bridge. His line of thought is thus summarized by "The British Medical Journal" (March 2d):

"The human-growing anthropoid, owing to hard times, left the forests and became a beast of prey, probably the most cunning and ferocious that has ever stalked on the face of the earth. In the interglacial period man was a mammoth hunter. The Danish kitchen middens show that the primitive Europeans were fish and flesh eaters. The Asiatic stock, meanwhile, evolved into shepherds and began to cultivate cereals in the alluvial plains of the great rivers. The irruption of Asiatics into Europe brought about the introduction of cereals and domesticated animals, and a mixed diet became usual. With the overgrowth of population in the East vegetarianism arose, and man took to rice-eating, not from desire, but through scarcity of animal food. The Eskimo remains to this day an example of a pure flesh-eater. The anthropoid stock from which man evolved fed on nuts, fruits, eggs, small birds and insects. Such is still the mixed diet of the ape, as well as of the Arabs of this age. Owing to the struggle for existence man has evolved into a flesh-eater, a mixed feeder, and lastly into a vegetarian, but vegetarianism became possible to him only by the introduction of fire and cooking. He has neither the teeth nor the gut of a herbivorous animal; otherwise he would naturally graze the fields, and in winter chew oats in a manger."

Professor Hueppe asserts that the experiments of breeders show that the best proportion of albumen to carbohydrates in the diet is 1 : 5. Among the Eskimo, he says, it is found to be 1 : 2.9, among Europeans on a mixed diet 1 : 5.3. The Irish peasant, on the other hand, consumes, or used to consume, a diet containing ten times as much carbohydrates as albumen (1 : 10.6), and in a Munich vegetarian Voit found the proportion to be 1 : 11. A diet such as that of the Irish peasant increases the death-rate among

all those in whom the excess of carbohydrates cannot be burned off by hard bodily labor; in other words, it is injurious to all but those of middle age. Says the writer:

"Such a diet can be consistently borne only by a man bred to it from infancy, and accustomed to the doing of hard work. There is no advantage in vegetarianism as a working diet. The same amount of potential energy (thirty-three per cent.) consumed as food appears as work in the carnivorous dog, the herbivorous horse, and the omnivorous man. No vegetarian animal, not even the horse, ox, camel, or elephant, can carry the weight of his own body. The carnivorous lion, on the other hand, gripping a calf equal to himself in weight, can jump a hurdle six feet high. The lifting power of man, the mixed feeder, exceeds that of any other mammal. . . . The vegetarian is like an overheated steam-engine which is in danger of explosion owing to the use of a wrong kind of fuel. His digestive system is forced to deal with a far greater bulk of food, and energy which might be used for the higher purposes of mental activity is wasted. Only in the condition of hard manual labor in the open air can a purely vegetarian diet be borne. Of course he who consumes milk, eggs, butter and cheese cannot be considered a vegetarian. Vegetarianism does not, as is sometimes suggested, lead to a mild and gentle spirit, for the wild buffalo, the rhinoceros, and the rice-eating Chinese pirate are alike remarkable for ferocity and cunning. Finally, the vegetarian is exposed to as many chances of poisoning as the flesh-eater. The vegetarians of our time, Professor Hueppe tells us, belong to the class of neurotic men who, failing to meet the strain of town life, ever seek for a 'heal-all' in one or other crank. Their doctrines, pushed with fanatic zeal, make no impression on the healthy and only tend to overthrow the balance of others who, like themselves, are the victims of an unnatural mode of existence."

LABOR.—The pernicious, debilitating tendencies of bodily Pleasure need to be counteracted by the invigorating exercises of bodily Labor; whereas bodily Labor without bodily Pleasure converts the body into a mere machine, and brutifies the Soul..—Anon.

DISEASES, *desperate grown*,
By desperate appliances are relieved,
Or not at all.

—Shakespeare.

EDITOR'S TABLE.

SANITARIAN, SEPTEMBER, 1901.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 837 Clinton Street, Brooklyn, N. Y.

THE PREVENTION OF TUBERCULOSIS.

Whatever exceptions may be taken to Dr. Koch's startling announcement—most of all to those who have been and are still pursuing the extermination of tuberculous milch cows—that bovine tuberculosis is not communicable to human beings at any age by the milk, butter or meat from tuberculous cows, surely everybody will be glad of it, if, upon further investigation his declaration is verified. It is evident, however, from his paper, printed in full on other pages, that he does not consider the results of his investigation as yet altogether conclusive, though he supports them with a mass of evidence which clearly demonstrates a distinction between human and bovine tuberculosis; but less clearly the non-communicability of bovine tuberculosis to man. Moreover, his demonstration of the non-identity of the tubercle bacillus of man and animals, as several of our contemporaries have promptly taken occasion to remark, is not original with Dr. Koch, but was discovered by Dr. Theobald Smith, now of Harvard University, and Pathologist to the Massachusetts State Board of Health, several years ago. But Dr. Smith can hardly be said to have so emphasized his discovery as to have laid the foundation of Dr. Koch's experiments. The "Boston Journal" of August 4th publishes an interview with Dr. Smith on the subject, and reports him to have said: "What I wrote in my article in 1898, no subsequent experiments have caused me to need to alter. The experiments on the cattle and other animals were made during the years 1895, 1896, 1897 and 1898, here on the premises, and showed me, as I then wrote, and as Dr. Koch has just set forth, that sputum and bovine tubercle bacilli differ, and that the former is less virulent and not dangerous to cattle."

Infected Meat Not Safe.

"But do you consider now the converse true, that bovine bacilli are not dangerous to human beings?" was asked.

"The converse by no means follows, from my experiments. That is something we know next to nothing about yet, and to accept as true the theory that human beings are comparatively safe from infection by bovine bacilli, on present knowledge, and let down the

restrictions against infected cattle, I should consider unwise, and perhaps dangerous."

Of this subject, Dr. Smith said in his paper, three years ago: "It seems to me that, accepting the clinical evidence on hand, bovine tuberculosis may be transmitted to children when the body is overpowered by large numbers of bacilli, as in udder tuberculosis, or when certain unknown favorable conditions exist. To prevent this from occurring, a rigid, periodic dairy inspection and the removal of all suspicious udder affections and all emaciated animals is as much as public health authorities can at present demand."

Subsequent clinical experience confirms these observations of Dr. Smith; and, it should be observed, Prof. Koch does not undertake to positively gainsay them. In concluding his paper, he invites the repetition of the experiments upon which he bases his declaration by others, "in order that all doubt of the correctness of my assertion may be removed. I wish only to add that, owing to the great importance of the matter, our government has resolved to appoint a commission to make further inquiries on the subject." And he is second to none in his urgency of thoroughly practical measures for the care of consumptives and for the prevention of the spread of tuberculosis.

THE WAR ON MOSQUITOES.

Dr. Doty's demonstration of the fatal effects of petroleum oil on mosquitoes, may commend itself to the people of Staten Island as an economical measure, compared with draining the ponds which they have long known the necessity of, but rejected on account of the cost. About twenty years ago a law was passed requiring the drainage of the ponds there for the prevention of malaria. But on a partial estimate of the cost, they concluded that malaria was less costly, so they resisted the law, and secured its repeal. They have been content to put up with malaria ever since.

It is evident that the spraying of stagnant ponds with petroleum there, or elsewhere, however efficacious it may be as an insecticide, to the extent of its applicability, it can be of but little public benefit. Indeed, this discovery of the function of the mosquito really adds nothing to long-recognized needful drainage of malarial regions for the prevention of fever. However true it may be that mosquitoes transmit malaria, they *do not originate it.* Stagnant fresh water ponds, sluggish and obstructed drains, are the original sources of malaria, and the breeding places of mosquitoes. Do

away with these and there will be neither malaria nor mosquitoes. There are already some drainage laws of New York, intended to protect the people from malarial diseases, but they are neglected by the sanitary authorities, and the people generally fail to recognize their utility.

The State Health Department is making arrangements for a convention of health officers and registrars of vital statistics of the State, to be held in Albany on October 24th and 25th. There are 1,400 local health boards in the State, each having a health officer and registrar of vital statistics. Papers will be read on the subjects of sanitation, public health, water supply, sewerage, vital statistics, etc. It is to be hoped that the prevention of malaria may be a prominent topic of consideration.

The New York City Board of Health, doubtless by the prompting of Dr. Doty, who is an ex-officio member, has prepared a circular of instruction regarding the relation of mosquitoes to the spread of malaria, and the best means of exterminating these pests. It advises the drainage and filling of all pools of stagnant water, and the treatment by oil of those which cannot be drained. It is to be hoped that the board will follow its own advice and do away with the breeding-places of mosquitoes, which are very plentiful in some of the outlying parts of the city, and especially in the Central and other public parks in the several boroughs.

INHALATION OF DUST.

SAENGER, at the Medic. Gesell. zu Magdeburg, January 16, 1901 ("Medical News"), deliberated on the cause underlying the diseases usually ascribed to the inhalation of dust. The penetration of dust-particles in the deeper and deepest air channels of the whole respiratory tract must be a very difficult matter indeed, because there are so many normally disposed bars to it. The bronchial tree itself is composed of many canals variously and complexly curved upon themselves, and placed more or less at angles to each other, while the caliber steadily decreases, beginning with the trachea. To assume that dust-particles move along the axis of such a tortuous system of passages, whether the force be expiratory or inspiratory, is undoubtedly an error. As a matter of fact, the dust probably impinges more or less constantly upon the walls at each turn, and more especially upon the convexity of the curves. Such a path for it is therefore a resultant of the bend in the canal itself and its effect upon the dust-bearing currents. Thus it happens that the bulk of the dust in the air current

rapidly comes into contact with the convexities of these tortuous channels, and in a very devious route practically all of it meets the walls and, if these are moist, of course adheres; when, as in the lungs these turns and angles are wonderfully multiplied, it soon follows that all the dust remains clinging to the walls. In a very similar way a long, gradually narrowing tube tends to promote a deposit of dust upon its walls out of a current of air passing through it. From theoretical considerations and drawings and actual experiments the author enunciated the theory that in the lungs, on account of the arrangement of the bronchial tree and the natural moisture of the mucosa, dust does not penetrate very far. To substantiate this fact there are the observations that in those exposed to dusty air, the vast majority of the dust particles remain in the mouth and in the walls of the larynx. Similarly in the nose, when its cavity is normally arranged, a very large portion of the dust will be taken up. In spite of all these considerations the author does not deny the fact that dust does occasionally reach the terminal bronchi and the alveoli of the lungs. This he was able to demonstrate in an experimental way and describes the causes as follows: With abundance of dust and an unhealthy, superabundant, rather watery bronchial secretion, and with at the same time an excitement of the respiratory function in such a manner that the inspiratory effort is stronger than the expiratory, it slowly transpires that the dust-laden air charges the secretion, and this is by degrees drawn more and more into the smaller and smaller branchi until finally the alveoli are reached.

CINEMATOGRAPH FOR THE BLIND IN FRANCE.

Dr. Dussaud, of the Psychological Institute of Paris, gave a lecture on February 16 at the Hôpital des Sociétés Savantes on the education of the blind and deaf. A large audience witnessed interesting experiments founded on his method for supplementing the senses of these two classes of unfortunates.

The cinematograph for the blind is a machine which passes under the fingers of the blind, a series of reliefs representing the same object in different positions—the branch of a tree, a bird, or any other object. The blind person has the illusion of moving scenes, just as photographs passing over a luminous screen lend the illusion to those with sight.

Dr. Dussaud has also arranged an electric vibration for the use of the deaf who are incurable. This gives them the notion of musical rhythm. For those not entirely deaf, he has invented a

"gradual amplifier of sounds," which supplements the organs of hearing and in some instances improves them.

Dr. Dussaud expressed the hope that these two inventions would materially aid in the education of the deaf and blind.

The doctor gave a number of statistics already furnished by him to the Academy of Medicine and the Society of Biology, showing that his method had been applied during the last four years to more than three hundred patients affected either with blindness or deafness, and that in most cases the results obtained had been extremely satisfactory.

W. P. ATWELL,
Consul.

Roubaix, February 18, 1901.

THE PROHIBITION OF INJURIOUS FOOD PRESERVATIVES IN MASSACHUSETTS.

AN ACT relative to the sale of articles of food and drink which contain antiseptic or preservative substances.

Be it enacted, etc., as follows:

Section 1. Every article sold as an article or ingredient of food or drink that contains any added antiseptic or preservative substance, except common table salt, saltpeter, cane sugar, alcohol, vinegar, spices, and in smoked food the natural products of the smoking process, shall be deemed to be adulterated within the meaning of chapter three hundred and forty-four of the acts of the year eighteen hundred and ninety-seven, unless every package of such article sold or offered for sale bears a label on which are clearly indicated the presence and the percentage of every such antiseptic or preservative substance.

Sec. 2. The foregoing provision shall not apply to such portions of suitable preservative substances as are employed as a surface application for preserving dried fish or meat, or to such preservative substances as exist in animal or vegetable tissues as a natural component thereof; but shall apply to additional quantities.

Sec. 3. This act shall be construed as in addition to and not superseding or annulling any of the provisions of existing laws.

Sec. 4. Within sixty days after the passage of this act the State Board of Health shall take such measures as the board may deem sufficient to make the provisions of the act known to the persons who may be affected thereby.

Sec. 5. Goods held in stock by retail dealers prior to the date of taking effect of this act, if proved to have been so held, shall be exempt therefrom during the first year of the operation of this act.

Sec. 6. Section four of this act shall take effect upon its passage, and the remainder of the act shall take effect on the first day of January in the year nineteen hundred and two.

Approved May 1, 1901.

FRAUDULENT CANNED GOODS IN MEXICO.

I desire to call attention to a fraud that is being perpetrated by certain persons interested in the canning of oysters in the United States.

Various complaints have lately been made to me that certain brands of canned oysters sent here for sale contained almost no oysters. In investigating this matter, I purchased in open market two cans wrapped with the labels of a certain oyster canner of the United States. One of these tins was half filled with juice and held nine small oysters; the other contained seven.

These facts are regrettable, inasmuch as our canned goods trade is increasing fast in this district. I have spent much time and trouble in promoting its growth. A few examples of bad faith such as this will undo the work faster than I can hope to remedy the evil.

In the purchase of canned goods, a certain amount of confidence has to be placed in the good faith of the canners, as the buyer has no opportunity before purchasing of judging for himself as to the excellence of the article.

The people of this district are not overconfident in outsiders at best, and until recently the trade in canned goods has increased slowly. It is now fast becoming a factor in the import trade, however, and should be protected as far as possible from such flagrant frauds as the above. EDWARD H. THOMPSON,

Progreso, January 22, 1901. Consul.

FISHY BUTTER IN AUSTRALIA.

Consul Goding, of Newcastle, January 29, 1901, reports that a discovery of importance to the dairying interests of the world has been made by the Agricultural Department of New South Wales. As the result of experiments with regard to "fishy" butter, the dairy expert has succeeded in isolating the micro-organism which causes that disease. For several years, says Mr. Goding, this matter has been the subject of scientific investigation, the peculiar liability of butter to become fishy being one of the greatest difficulties to be contended with in the export trade of this article. Hence the discovery is not only of scientific interest, but of considerable commercial importance. The consul adds that not only

is the expert satisfied as to the correctness of his diagnosis, but that he has inoculated sterile cream with the organism and actually succeeded in producing fishy butter.

MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

NEW YORK.—Bulletin of State Department of Health reports for June: Population, 7,268,000: Total deaths, 9,500; death rate, 16.0; deaths under five years, 2,500; percentage of deaths under five years to total mortality, 26.3; from zymotic diseases, per thousand from all causes, 133; from cerebro-spinal meningitis, 42; typhoid fever, 86; malarial diseases, 27; small-pox, 74; scarlet fever, 165; measles, 95; erysipelas, 27; whooping cough, 54; croup and diphtheria, 246; diarrhœal diseases, 450; acute respiratory diseases, 965; consumption, 1,111; puerperal diseases, 97; diseases of the digestive system (not diarrhœal), 596; urinary system, 751; circulatory system, 957; nervous system, 981; cancer, 418; violence, 723; old age, 379; unclassified, 1,259.

City of New York, 3,526,517: Total deaths, 5,307; death rate, 18.2; deaths under five years, 1,718; from cerebro-spinal meningitis, 25; typhoid fever, 29; malarial diseases, 17; small-pox, 71; scarlet fever, 142; measles, 46; erysipelas, 16; whooping cough, 20; croup and diphtheria, 193; diarrhœal diseases, 359; acute respiratory diseases, 631; consumption, 651; cancer, 216.

Small-pox reported during the four weeks ending July 27th, 238 cases, with 79 deaths. The number of cases for the four weeks respectively was, 91, 66, 35, 46—a decrease of 107 from the number of cases during the preceding four weeks.

The special laboratory for combating the *bubonic plague* has been completed recently at a cost of $30,000. With its new facilities the Health Department will be able to cope with any possible danger which may arise from the plague. The laboratory is the most completely equipped of its kind in the country. The building stands at the foot of East Sixteenth Street, and is to be known as the Robert A. Van Wyck Laboratory. It is built entirely of concrete and marble, and is absolutely fireproof. For the present the new laboratory will be used for the general work of the health board.

Borough of Manhattan, 1,873,562: Total deaths, 2,872; death rate, 18.7; deaths under five years, 978; from cerebro-spinal meningitis, 12; typhoid fever, 13; malarial diseases, 2; small-pox, 6; scarlet fever, 60; measles, 21; erysipelas, 12; whooping cough, 8; croup and diphtheria, 105; diarrhœal diseases, 209; acute respiratory diseases, 359; consumption, 329; cancer, 133.

Borough of the Bronx, 222,124: Total deaths, 383; death rate, 21.5; deaths under five years, 96; from cerebro-spinal meningitis, 7; typhoid fever, 1; malarial diseases, 4; small-pox, 65; scarlet fever, 4; croup and diphtheria, 12; diarrhœal diseases, 9; acute respiratory diseases, 26; consumption, 92; cancer, 14.

Borough of Brooklyn, 1,209,064: Total deaths, 1,771; death rate, 17.7; deaths under five years, 569; from cerebro-spinal meningitis, 5; typhoid fever, 1; malarial diseases, 8; scarlatina, 74; measles, 24; erysipelas, 4; whooping cough, 11; croup and diphtheria, 69; diarrhœal diseases, 133; acute respiratory diseases, 217; consumption, 197; cancer, 62.

Borough of Queens, 162,834: Total deaths, 192; death rate, 14.3; deaths under five years, 47; from cerebro-spinal meningitis, 1; typhoid fever, 3; malarial diseases, 3; scarlet fever, 4; whooping cough, 1; croup and diphtheria, 4; diarrhœal diseases, 4; acute respiratory diseases, 17; consumption, 25; cancer, 4.

Borough of Richmond, 68,933: Total deaths, 89; death rate, 15.7; deaths under five years, 28; from typhoid fever, 1; scarlet fever, 1; measles, 1; croup and diphtheria, 3; diarrhœal diseases, 4; acute respiratory diseases, 12; consumption, 8; cancer, 3.

Small-pox during the month developed at Freeport, Long Island; Tuckahoe and Dobbs Ferry, Westchester Co.; Charlton and Victory Mills, Saratoga Co.; Whitehall, Washington Co.; Sharon Springs, Rochester, York, Livingston Co.; Catharine, Schuyler Co.; Dunkirk; Gowanda and vicinity, Cattaraugus Co., in all 25 cases in ten of these localities, and in Victory Mills and Gowanda each probably six or eight cases. It has continued in Yonkers, where there were 22 cases and 3 deaths in June; the town of Ramapo, 8 cases; Goshen and places whither it has spread from there, 11 in all; and at Cohoes not yet reported free—probably there have been 100 cases in the State during the month outside of New York City. About 350 cases have been reported during June in the city of New York, with 71 deaths. The 74 deaths for the State is the largest number from small-pox of any month on our records.

Albany, 94,151: Total deaths, 145; death rate, 18.7; deaths under five years, 25; from typhoid fever, 3; scarlet fever, 1; diarrhœal diseases, 1; acute respiratory diseases, 14; consumption, 24; cancer, 9.

Syracuse, 108,374: Total deaths, 119; death rate, 13.5; deaths under five years, 19; from typhoid fever, 2; croup and diphtheria, 6; diarrhœal diseases, 3; acute respiratory diseases, 12; consumption, 14; cancer, 8.

Buffalo, 352,387: Total deaths, 375; death rate, 13.0; deaths under five years, 103; from cerebro-spinal meningitis, 2; typhoid fever, 5; scarlet fever, 6; measles, 6; erysipelas, 1; whooping cough, 2; croup and diphtheria, 9; diarrhœal diseases, 24; acute respiratory diseases, 33; consumption, 37; cancer, 23.

Rochester, 162,658: Total deaths, 159; death rate, 11.0; deaths under five years, 27; from typhoid fever, 2; diarrhœal diseases, 2; acute respiratory diseases, 15; consumption, 24; cancer, 9.

CALIFORNIA.—San Francisco: July 6 to 11—Plague, 5 cases, 4 deaths. The work of cleaning up and disinfecting Chinatown proceeds.

COLORADO.—Denver, 150,000: Report for June: Total deaths, 250; death rate, 21.54; deaths under five years, 51; from scarlet fever, 11; measles, 3; erysipelas, 1; croup and diphtheria, 6; diarrhœal diseases, 10; acute respiratory diseases, 20; consumption, 56; cancer, 15.

CONNECTICUT.—The State Board of Health Bulletin reports for June: Total deaths in 165 towns, with an aggregate population of 905,269, 1,022; death rates, for the large towns, 13.7; small towns, 12.9; for the State, 3.5; from cerebro-spinal meningitis, 4; typhoid fever, 15; malarial fever, 13; measles, 16; whooping cough, 4; erysipelas, 2; croup and diphtheria, 23; diarrhœal diseases, 39; acute respiratory diseases, 80; consumption, 130; diseases of the nervous system, 120; heart diseases, 98; violence, 74; all other causes, 404.

DELAWARE.—Wilmington has a good system of sewers, says *Evening*, July 7, and the Board has determined that they must be used. There are about 2,600 houses in the city on the line of sewers which are not connected therewith. All of these houses have been examined by the health officers and 150 notices served on the owners instructing them to connect their premises with sewers at once.

DISTRICT OF COLUMBIA.—278,718. The Health Officer's reports for four weeks ending July 27: Total deaths, 652; death rate, 30.37; deaths under five years, 271; from typhoid fever, 14; diphtheria, 4; diarrhœal diseases, 176; acute respiratory diseases, 15; consumption, 54; sunstroke, 92; cancer, 17.

ILLINOIS.—Chicago, 1,758,025: Report for May: Total deaths, 2,046; death rate, 13.81; deaths under five years, 519; from cerebro-spinal meningitis, 1; typhoid fever, 24; scarlet fever, 21; measles, 26; whooping cough, 1; croup and diphtheria, 32; diarr-

hœal diseases, 10; erysipelas, 7; acute respiratory diseases, 376; consumption, 243; cancer, 80.

INDIANA.—The State Board of Health reports for July: Total number of deaths, 3,162, an increase over June of 919. Annual death rate, 14.8. The number in July, 1900, was 2,932, and death rate, 13.1. The important causes of death were: Consumption, 382; typhoid fever, 77; diphtheria, 14; scarlet fever, 5; measles, 11; whooping cough, 15; pneumonia, 53; diarrhœal diseases, 454; cerebro-spinal meningitis, 25; influenza, 8; puerperal fever, 6; cancer, 112; violence, 195; small-pox, 1. Mural population, 847,-302; 1,257 deaths; death rate, 17.5. Rural population, 1,669,160; 1,903 deaths; death rate, 13.4.

IOWA.—Davenport, 40,000: Report for June: Total deaths, 38; death rate, 12.9; deaths under five years, 5; from typhoid fever, 2; small-pox, 1; acute respiratory diseases, 2; consumption, 5; cancer, 2.

LOUISIANA.—New Orleans, 300,000—90,000 colored: Report for June: Total deaths, 603—203 colored; death rates, white, 22.85; colored, 27.03; total, 24.12; deaths under five years, 184—59 colored; from typhoid fever, 20; malarial diseases, 12; small-pox, 2; scarlet fever, 3; whooping cough, 6; croup and diphtheria, 1; diarrhœal diseases, 76; acute respiratory diseases, 31; consumption, 72; cancer, 22.

MARYLAND.—Baltimore, 541,000—78;000 colored. Report for June: Total deaths, 740; death rate, 15.61; deaths under five years, 250; from typhoid fever, 8; measles, 2; whooping cough, 3; croup and diphtheria, 14; acute respiratory diseases, 55; consumption, 85; cancer, 25.

MICHIGAN.—The Secretary reports for July, 1901, compared with the preceding month: Diarrhœa, cholera morbus, intermittent fever, dysentery, cholera infantum, remittent fever, typhoid fever and diphtheria were more prevalent; and bronchitis, influenza, pleuritis, small-pox, erysipelas, pneumonia and whooping cough were less prevalent.

Reports from all sources show cerebro-spinal meningitis reported at 6 places more; whooping cough at 4 places less; diphtheria at 5 places more; measles at 14 places less; typhoid fever at 40 places more; scarlet fever at 9 places less; small-pox at 4 places less, and consumption at 21 places less, in the month of July, 1901, than in the preceding month.

Small-pox outbreaks, since the first of January to August 4th, in 313 localities in Michigan have been caused to cease, and in 193, or 62 per cent. of those outbreaks, the disease was restricted to the household where the first case occurred. It is now present in 64 places, 14 places less than in the preceding week.

The number of deaths returned to the Department of State during the month was 2,470—12 more than for the preceding month, and 39 less than for July, 1900. The death rate was 12.2 per thousand population.

There were 502 deaths of infants under one year of age; 155 aged 1 to 4 years, inclusive, and 646 of persons over 65 years of age. Important causes of death were: Pulmonary tuberculosis, 155; other forms of tuberculosis, 21; typhoid fever, 27; diphtheria and croup, 16; scarlet fever, 7; measles, 9; whooping cough, 11; small-pox, 2; pneumonia, 63; diarrhœal diseases of infants under two years, 252; cancer, 126; violence, 234.

MINNESOTA.—Minneapolis, 202,718: Report for June: Total deaths, 192; death rate, 8.63; deaths under five years, 37; from typhoid fever, 5; small-pox, 1; scarlet fever, 1; measles, 4; diphtheria, 14; diarrhœal diseases, 7; acute respiratory diseases, 10; consumption, 18; cancer, 10.

St. Paul, 165,000: Report for June: Total deaths, 125; death rate, 9.01; deaths under five years, 45; from typhoid fever, 1; scarlet fever, 1; measles, 2; whooping cough, 1; croup and diphtheria, 7; diarrhœal diseases, 8; acute respiratory diseases, 1; consumption, 6; cancer, 5.

MISSOURI.—St. Louis, 575,200: Report for June: Total deaths, 879; death rate, 18.33; deaths under five years, 293; from cerebro-spinal meningitis, 1; typhoid fever, 6; malarial diseases, 9; small-pox, 1; scarlet fever, 5; measles, 8; whooping cough, 9; croup and diphtheria, 33; diarrhœal diseases, 61; acute respiratory diseases, 67; consumption, 74; cancer, 28.

NEW JERSEY.—Newark, 250,000: Report for four weeks ending July 27: Total deaths, 551; death rate, 28.45; deaths under five years, 198; from cerebro-spinal meningitis, 1; typhoid fever, 7; malarial diseases, 4; small-pox, 2; scarlet fever, 3; measles, 3; diarrhœal diseases, 81; acute respiratory diseases, 14; consumption, 45; cancer, 13; sun-stroke, 23.

Paterson, 107,409: Report for June: Total deaths, 145; death rate, 16.08; deaths under five years, 37; from typhoid fever, 2; malarial fever, 1; small-pox, 1; scarlet fever, 5; diphtheria, 3;

diarrhœal diseases, 2; acute respiratory diseases, 15; consumption, 12; cancer, 5.

NORTH CAROLINA.—The State Board of Health Bulletin reports for June: Total deaths in twenty-one towns, with an aggregate population of 103,630 (39,760 colored), 213—111 colored; death rates, white, 19.2; colored, 23.5; total, 24.7; deaths under five years, 91—46 colored; from typhoid fever, 9; malarial fever, 3; whooping cough, 6; measles, 1; pneumonia, 7; consumption, 22; brain diseases, 9; heart diseases, 9; neurotic diseases, 6; diarrhœal diseases, 52; violence, 8; all other causes, 81.

OHIO.—Cleveland, 395,000: Report for June: Total deaths, 448; death rate, 15.45; deaths under five years, 155; from cerebro-spinal meningitis, 2; typhoid fever, 1; scarlet fever, 4; measles, 2; croup and diphtheria, 6; diarrhœal diseases, 17; acute respiratory diseases, 50; consumption, 18; cancer, 21.

Health Officer Friedrich is reported (*Plain Dealer*) to have taken a new departure for the suppression of small-pox. Experience, he says, but don't state whose, has shown that the use of formaldehyde is efficacious in destroying the small-pox bacillus. He has discontinued vaccination and undertaken the formaldehyde treatment of every house in the city, with the expectation of stamping out the disease. He assigns as a reason for this departure the special danger of tetanus from vaccination in hot weather—infinitely more dangerous, he contends, than small-pox, and more difficult to combat.

PENNSYLVANIA.—Philadelphia, 1,293,697: Report for four weeks ending July 20: Total deaths, 2,396; deaths under five years, 826; from cerebro-spinal meningitis, 9; typhoid fever, 48; malarial fevers, 2; small-pox, 2; scarlet fever, 17; measles, 3; whooping cough, 27; erysipelas, 3; croup and diphtheria, 29; diarrhœal diseases, 312; acute respiratory diseases, 143; consumption, 216; cancer, 36; sun-stroke, 373.

Pittsburg, 332,000: Report for four weeks ending July 27: Total deaths, 676; death rate, 26.4; deaths under five years, 320; from typhoid fever, 34; scarlet fever, 8; measles, 3; whooping cough, 7; croup and diphtheria, 6; diarrhœal diseases, 182; acute respiratory diseases, 32; consumption, 28; cancer, 10; sunstroke 10.

WASHINGTON.—Seattle, 90,000: Report for June: Total deaths, 58; death rate, 7.73; deaths under five years, 16; from typhoid fever, 1; small-pox, 1; measles, 1; diphtheria, 1; diarrhœal diseases, 3; pneumonia, 4; consumption, 5; cancer, 4.

WISCONSIN.—Milwaukee, 295,000: Report for June: Total deaths, 270; death rate, 11.12; deaths under five years, 85; from typhoid fever, 5; scarlet fever, 1; measles, 4; croup and diphtheria, 5; diarrhœal diseases, 15; consumption, 37; cancer, 23.

CUBA.—Havana, 255,555: Major Gorgas, Chief Sanitary Officer, reports for June, 1901, deaths from all causes, 498—the smallest number occurring in any June since 1889; rate per thousand, 23.28. The smallest preceding rate was that of 1900, when it was 24.90; the highest, that of the year 1898, was 64.32; the average is 41.78. The rate for the present month compares favorably with that of many of the large cities of the civilized world. Attention is particularly called to the absence of yellow fever, of which there was not a case. The records show that, since 1761, no previous June has been passed with absolute freedom from this disease. The average number of deaths from yellow fever in June for the last nine years of Spanish occupation was 47.88, the smallest number occurring in June, 1898, when there were three deaths; the largest number in June, 1897, when there were 174 deaths. The last death from yellow fever occurred March 16. No small-pox since July, 1900. Deaths from typhoid fever, 15; intermittent fever, 10; tetanus, 19; diarrhœal diseases, 144—117 of infants under two years; tuberculosis, 49; broncho-pneumonia, 14; cancer, 12.

PORTO RICO.—Report of John Van R. Hoff, Major-Surgeon, U. S. A., Chief Surgeon Department of Porto Rico, some time President of the Superior Board of Health and Board of Charities, gives the general sanitary condition of Porto Rico and work of Board during the period from June 29, 1899, when the Board was constituted, to May 1, 1900, when the military government of Porto Rico ceased. The Board organized an excellent foundation, which it successfully administered for the time being, and left a worthy heritage of practical measures for the civil government.

The prevalence of certain important diseases and the deaths therefrom in the several municipal districts is summarized for each of the past ten years. The aggregate of deaths from: Small-pox, 1890, 2,362; 1891, 664; 1892, 61; 1893, 11; 1894, 372; 1895, 921; 1896, 472; 1897, 592; 1898, 522; 1899, 242. Yellow fever, 1890, 152; 1891, 97; 1892, 185; 1893, 133; 1894, 116; 1895, 360; 1896, 76; 1897, 9; 1898, 23; 1899, 0. Typhoid fever, 1890, 409; 1891, 369; 1892, 364; 1893, 331; 1894, 365; 1895, 347; 1896, 479; 1897, 405; 1898, 416; 1899, 346. Meningitis, 1890, 256; 1891, 227; 1892, 264; 1893, 297; 1894, 261; 1895, 314; 1896, 345; 1897, 359; 1898, 358; 1899, 370. Dysentery, 1890, 518; 1891, 377; 1892,

557; 1893, 405; 1894, 661; 1895, 969; 1896, 867; 1897, 1,974; 1898, 1,913; 1899, 3,568. Diphtheria, 1890, 44; 1891, 43; 1892, 44; 1893, 38; 1894, 50; 1895, 63; 1896, 43; 1897, 44; 1898, 67; 1899, 45. Tuberculosis, 1890, 1,754; 1891, 1,528; 1892, 1,683; 1893, 1,706; 1894, 1,978; 1895, 1,814; 1896, 1,836; 1897, 1,938; 1898, 2,094; 1899, 1,910. Tetanus, 1890, 986; 1891, 898; 1892, 1,043; 1893, 1,012; 1894, 991; 1895, 950; 1896, 870; 1897, 794; 1898, 888; 1899, 1,084. Anæmia, 1890, 3,450; 1891, 2,994; 1892, 3,508; 1893, 3,240; 1894, 3,448; 1895, 3,520; 1896, 3,904; 1897, 4,723; 1898, 7,369; 1899, 8,977.

Immediately previous to the month of October, 1899, owing to the demoralization consequent upon the hurricane, very incomplete reports were made to this board. It is therefore impossible to complete the statistics for the entire past year, and because of the impracticability of securing statistics of different diseases comparison is not possible.

The statistics here given are for the seven months ending April 30, 1900, only.

The total mortality for this period, exclusive of still-births, was 23,936, which is at the rate of 42 per 1,000 per annum.

Zymotic diseases, including the ten commonly recognized as infectious, namely: Cerebro-spinal meningitis, typhoid fever, malarial fever, small-pox, scarlet fever, measles, erysipelas, whooping cough, diphtheria, and diarrhœal diseases. No cases of yellow fever were reported.

There were 7,479 deaths during the seven months from this group, which was about 31.2 per cent. of the total mortality.

Small-pox has never been absent from Porto Rico and has frequently been epidemic.

The average annual number of deaths for the past ten years was 621, the greatest number, 2,362, occurring in 1890, and the least, 11, in 1893. In 1899 there were about 50 per cent. less deaths than in any of the three preceding years. This decrease was due to the general vaccination in the island, which was concluded June 30 of that year; 860,000 vaccinations were performed, under direction of the chief surgeon of the department, during the four months preceding this date. All the deaths reported in 1899 from small-pox except one occurred prior to the day on which the work was concluded. At the rate of 242 for the first six months, the annual deaths would have been practically the same as in the preceding three years.

During the seven months covered by these statistics but one

death has occurred from this cause. This in November in the district of Ponce

During the year ending December 31, 1899, there were reported 39,918 deaths from all causes, making a death rate of 41 per thousand. Compared with the two preceding years, in 1897 the rate was 34, and in 1898 the rate was 35 per thousand.

The number of deaths reported in 1899 was greater by 6,568 than in 1898, and by 9,362 than in 1897. There was 1 death to 24 of the population against 1 to 27.4 in 1898, and 1 to 29 in 1897.

The excess of mortality in 1899 is accounted for by the terrible hurricane, August 9 of that year. On that day no less than 2,280 persons lost their lives from the violence of the storm. It is estimated that in addition to this number, of which there is a nominal list, 500 persons were killed of whom there is no record.

The storm left the people without shelter and without food, or but little of either. The only shelter hundreds had—for in the interior all the cabins of the poor were destroyed—was such as could be secured under spreading trees, where they lived for weeks, sleeping on the wet ground. All the fruits of the country, on which the poor depended to a great extent, were thrown to the ground, but to some extent were usable for about six weeks. The misery of people without shelter and deprived of their accustomed food is beyond description. To make matters worse, the municipal governments were almost wholly disorganized, and rendered incapable of extending any aid to the miserable people.

Such conditions could not continue without the development of sickness. It came speedily in the shape of anæmia and dysentery. "The mortality from these two diseases was directly in proportion to the lack of food and shelter, from which the inhabitants suffered. For the eight months, June to January, it was 28,700." There is no doubt at all had not food supplies been shipped from the United States, thousands of persons would have died from starvation. The report is replete with information on the pioneer work of practical sanitation and charity, meteorological data and local conditions.

PHILIPPINE ISLANDS.—Manila, 244,732: Report of vital statistics for May: Total number of deaths, 903—214 under five years; rates per 1,000, Filipinos, 47.58; Chinese, 37.21; American and foreign, 6.98; number of deaths with medical attendance, 513; without medical attendance, 390. Deaths from prevalent diseases: Bubonic plague, 124; tuberculosis, 96; bronchitis, 51; beri-beri, 60; dysentery, 15; convulsions (infantile), 166; cerebral

meningitis, 29; enteritis, 22; entero-colitis, 29; gastro-enteritis, 22; gastritis, 16.

CITY OF MEXICO, 368,777.—Bulletin of mortality for April, 1901: Deaths from all causes, 2,356; miscellaneous causes (enfermadades generales), 581; *typhus fever*, 169; tuberculosis, 183; bronchitis, 257; pneumonia, 249; broncho-pneumonia, 119; enteritis, 202; infantile diarrhœa, 250; meningitis, 50; diseases of the nervous system and organs of sense, 132; diseases of the circulatory apparatus, 73; other causes, 91. Death rate per 1,000 for the month, 6.38; annual death rate, 76.56.

ARGENTINE REPUBLIC.—Buenos Ayres, 829,826: Report for April: Total deaths, 1,253; deaths under five years, 496; from typhoid fever, 23; small-pox, 140; scarlet fever, 55; measles, 3; whooping cough, 4; erysipelas, 1; croup and diphtheria, 26; diarrhœal diseases, 95; acute respiratory diseases, 125; consumption, 133; cancer, 67.

AMERICAN PUBLIC HEALTH ASSOCIATION.

The Niagara Hotel, Buffalo, N. Y., will be the headquarters of the American Public Health Association during its twenty-ninth annual meeting, September 16-21, 1901, and the place of meeting will be but one block away, at the armory of the 74th Regiment.

The location is easy to reach, overlooking the waters of Erie and Niagara, well shaded, cool, and free from the noises and distractions of down town.

The committee is informed that transportation to and from Buffalo, from all parts of America, is already offered at unusually desirable rates, and, further, that still lower fares may be secured before the time of meeting.

Rates at the Niagara for rooms are two dollars and upward a day for one person, and members are advised to secure their rooms without delay.

Those who desire accommodations elsewhere are requested to write the Visitors' Information Company, 538 Ellicott Square, or the Buffalo Business Men's Association, 217 Main street, of whose competency and reliability your committee is assured. Desirable and convenient accommodations in close proximity to headquarters may thereby be secured at rates for rooms of one dollar and upward a day for each person.

For the Committee of Arrangements,

HENRY REED HOPKINS, Chairman.

BOOK REVIEWS.

LESSONS ON THE ANATOMY, PHYSIOLOGY AND HYGIENE OF INFANCY AND CHILDHOOD. By ALFRED C. COTTON, A. M., M. D., Professor of Diseases of Children, Rush Medical College, Chicago. 8vo. 174 pages. 90 illustrations. Cloth, $1.50. Chicago: Doctors' Magazine Publishing Co.

A book admirably adapted to its purpose, comprehending a condensed purview with numerous illustrations, of anatomical and physiological knowledge, essentially necessary to medical students, and nowhere else, to our knowledge, so lucidly displayed. About one-fourth of the volume is more particularly devoted to fœtal life and development. The remaining three-fourths comprehend all the details of hygienic management, beginning with the prematurely born, nourishment, weaning and substitute feeding. Foods, milk analysis, hygiene of later infancy, physiology and hygiene of childhood; concluding with a chapter on physiological abnormalities of the newborn.

Infancy and childhood is the period in human life above all others upon which depends the constitution of subsequent years to antagonize and contend with human adversities. Neglected hygiene at this period is to inherit the predisposition to all sorts of ills and early death.

Health culture, to be successful, must begin with infancy, be strictly attended to during the period of childhood; must be *taught* as well as practised by physician, parent and nurse. No other foundation of life can be laid than that which is laid at this period. If not laid under healthful conditions, and maintained by hygienic tutelage, the remainder of life is a life of sorrow at best, chiefly devoted to a search for health, but rarely attainable without such knowledge as this book inculcates, and for which we earnestly commend it.

UNIVERSITY OF THE STATE OF NEW YORK.*

College Department, third annual report, for 1900. Home Education Department: Bulletin 33, Public Libraries; Bulletin 34, Extension Teaching; Bulletin 35, Study Clubs; Bulletin 36, Summer Schools; Bulletin 37, Annual Report on Study Clubs; Bulletin 38, Annual Report on Public Libraries.

Regents' 114th Annual Report, for the year ending Sept. 30, 1900, comprehends: (1) The Secretary's report—a summary of the work of the departments into which the work of the regents was reorganized in 1898: Administrative, including charters, finances,

*Regents' Report, Administrative Department for 1900.

legislation, printing and publications. (2) College, including universities, professional, technical and other special schools and all matters pertaining to the degrees or licenses. (3) High Schools, including academies and all interests of secondary education. (4) Home Education, including all work heretofore done under the name of the External Department. (5) State Library. (6) State Museum, including all scientific interests.

The cost of education in New York in 1900 and annually in recent years is upward of $47,000,000, as follows: Common schools and allied interests, $33,421,491.37; secondary education, $6,096,374.41; higher education, $7,663,037.15. State aid, severally, $4,825,873.66; $368,153.56; $89,428.80.

In 1900 the State paid 14.43 per cent. toward the support of common schools and allied interests; 6.03 per cent. toward the support of secondary education, and 1.16 per cent. toward the support of higher education. During the last decade the growth in enrolment in the common schools has been 16 per cent., while the expenditures for their maintenance have increased 83 per cent.; in secondary education the expenditure has increased 110 per cent., the number of high schools has more than doubled, while expenditures for maintenance of secondary schools have increased 160 per cent. In higher, professional and technical education also, the number of students has more than doubled, with increase of expenditure 180 per cent.

The College Department is supported almost entirely by fees. It includes universities, professional, technical and other special schools, and all matters pertaining to degrees or licenses. As compared with the United States, New York has 8 per cent. of such institutions, with 19 per cent. of the students and 20 per cent. of the property. Specially significant is the development of her professional schools, which are protected by the best restrictive professional laws in the United States.

Founding of chartered libraries (bul. 33), for years ending September 30, 1891-1899, 131.

Public libraries, summarized (bul. 33), 1899, 155; volumes, 534,149; circulation, 2,072,686; circulation average per 100 vols., 388.

Travelling libraries, during the year 1899: 275 general travelling libraries and 289 extension libraries lent. Travelling pictures included 666 wall pictures; 8,066 photographs, mounted on 11x14-inch cards; 13 lanterns and 10,439 lantern slides.

Study Clubs (bul. 35), now registered, 331, including 73 during the year 1899. "As home study becomes a recognized method of

modern culture, the aids for such work increase. Ten years ago it would have been difficult, if not impossible, to get a guide for reading and study on a particular subject without paying a large sum to have one specially prepared. Now not only is the number of such outlines and syllabuses legion and constantly increasing, but many of them are excellently adapted to the needs both of clubs and of isolated students."

Summer schools (bul. 36) have won a place as a permanent factor in American education. The universities and best high schools are offering business courses, with better teachers and facilities, and the public is learning to look to educational, not speculative institutions, when it wishes real education or special training in any subject, which the summer schools now supply.

CONTEMPORARY LITERATURE.

LIFE IN THE SEA.

In a fascinating article in the August number of the "North American Review," Dr. Charles Minor Blackford gives much interesting information about "Life in the Sea." It was long thought that the dark waves were a fit abode only for strange, misshapen monsters. But, as between the sea and the land, Dr. Blackford contends, if the reproach of barrenness must attach to either, the land must bear that reproach, for the sea contains a richness of flora and fauna which the land cannot rival. From the surface downward, says Dr. Blackford, the ocean teems with life, to such a degree that naturalists stand aghast as they contemplate its infinite variety. Here is a description of what is to be seen on a coral lagoon:

"Life on the bottom exists in its greatest beauty and profusion in water that is free from sediment and shifting sands. On our Atlantic seaboard the conditions are not very favorable, and, though annelids, molluscs and crustaceans abound, the more beautiful forms are scarce. The delicate sea-pen lives on the mud banks, and forms of great symmetry are found; but this is nothing compared with the wealth of a coral lagoon. The vertical rays of the sun reflected from the bottom make the water as transparent as air; and, as the boat floats slowly across, one can gaze through the glass in the bottom of the boat on a scene of indescribable beauty. Great branching masses of coral of varying hue look like shrubs or even trees. Wonderful anthozoa, or flower animals, and the zoophytes, strange animal-plants, are distributed freely over the

bottom. In other places great lichen-covered rocks seem to be spangled with red, star-shaped flowers, and through and about it all the parrot fish flit, nibbling and browsing on the buds. No garden can equal these oceanic paradises in richness or variety of color; yet they are filled with animals almost to the exclusion of plant life. The lichen is a hydroid coral, the starlike flowers are but the vermilion ends of boring annelids, and the parrot fish do not nibble the stony coral, but seek gorgonias, madrepores or small crustaceans. 'Strange world in which the animal kingdom blossoms and the vegetable does not.' "

CUBAN FRUITS AND VEGETABLES.

It is wholly probable that one of Cuba's greatest industries, if not her greatest, will be the production of fruits and vegetables for the American market. Thirty or forty years ago the Havana orange was the choice orange of the market. American cultivation of the fruit, and the energy with which the American output has been pushed, have sent the Cuban orange into the background. But there is no question that the proper cultivation, in Cuba, of the Cuban stock will result in the production of an orange which for juiciness, flavor, size and sweetness will be without a superior in the world. The free-skinned mandarin oranges can be produced to advantage, as can the kindred fruits, the shaddock, the grape fruit, the lime and the lemon.

Cuba can raise all the bananas that the United States can eat, and it is probable that at no distant day those concerns which now control the trade in bananas and cocoanuts and pine-apples will all look to nearby Cuba for their supply of these fruits, leaving Jamaica and Belize and San Domingo to find new markets. Figs, dates, guavas, nectarines, apricots and pomegranates are all among the ready possibilities for either canning or shipment. The aguacate is a fruit which careful shipment might well lay down in northern markets to the great advantage of northern palates. To those who have eaten mangoes in the Philippines and other points in the far East, the Cuban mango is a distinct failure. The guava jelly of Cuba is endlessly superior to the product of India and the far East, and a larger market should be opened for it.

It is quite probable that there are several moderate fortunes waiting for those who will go to Cuba and grow strawberries in a business way. The same may be said of melons. By proper cultivation, strawberries may be produced every month in the year under natural conditions. Specially selected sites and artificial irrigation might be necessary, but the sites and the water are there for

those who will make scientific study of a promising industry. Small watermelons of delicious sweetness and flavor, and muskmelons of excellent quality, make their appearance in the market early in the year. Pine-apples are receiving considerable attention, and there are both promise and opening for wide extension of their cultivation. Cuba is a land of fruits and vegetables, and the great markets of America are open to her products. Many vegetables will produce two crops per year, and some are perennial. New York may well eat Cuban peas and tomatoes and strawberries, all fresh from the vines at reasonable prices in midwinter. With capital, cheap sugar and intelligent direction, Cuban canned fruits and preserves might well become famous. Careful and intelligent investigation of Cuba's possibilities in fruits and vegetables will open many avenues for profitable investment. The Cuban "sisal grass" is of better quality than the Mexican, and the industry is hardly touched. The yucca is a plant whose root yields a highly superior starch.—From "Cuba's Industrial Possibilities," by Albert G. Robinson, in the "American Monthly Review of Reviews" for August.

CHRISTIAN CONVERTS IN INDIA.

Of the difficulty of making Christian converts in India, Bishop Potter says, in the August "Century":

Our popular impression of the influence, *e. g.*, of Christian institutions and especially of Christian missions is, I am disposed to think, erroneous. Said a member of the Oxford Mission of Calcutta, with a fine courage for which one could not sufficiently honor him: "We had been here three years before we made one convert"; but he added, "When one remembers what his departure from his old fellowships cost him, one need not wonder." Nor, indeed, can any one who understands what an absolute expulsion from all earlier ties, fellowships, and recognitions on the part of kindred or friends such a step involves. But, on the other hand, one who understands what has been going on all the time since England entered India, will recognize that slowly but surely old traditions have been weakened and old lines of separation disappearing, so that, step by step, the dawn of a better and a brighter day is drawing near. I should be violating personal confidences if I should furnish the evidence of this which came to me in private conversation with Brahmans of high rank and official station; but I violate no confidence in saying that, among the most thoughtful and clear-sighted of these, it is coming to be more and more clearly perceived that the task is a hopeless one which claims to be

able to hold the minds and faith of a people who read and think to the outworn shibboleths of a corrupt and sensuous paganism. And meanwhile the work which Christian missionaries of many names, but of one noble aim, are doing in all these lands, in schools, in homes, in hospitals, in nurseries, in colleges, and in the hearts and lives of shame-bowed and sorrow-burdened men and women, is above all praise, as it is above all price. Much of the best of this work is our own. And herein and hereby is the divinest transfusion of all—the transfusion of the divinest Life of all into theirs who still walk in darkness and the shadows of death. May God, who has inspired it, crown it with complete success!

OWNING BOOKS.

In a newspaper was recently printed a letter from a book-lover asserting that books were of little use to those who only borrowed them or received them as gifts. He objected, as Ruskin also did, to cheap books, and said he was "*almost* convinced that if the cheapest books cost five dollars or more the world would be better off."

No doubt, says the editor of "St. Nicholas," this is an extreme statement, and would have to be expressed more cautiously to be true. Yet there is some truth in the idea that books may be too plentiful and too easy to buy. There is, possibly, a likeness between libraries and schools in this respect. The boy or girl in a big school is not so likely to form friendships as if in a smaller school. Where there is too wide a choice, there is less intimacy. So in the library. A large library is not so likely to become familiar and valued as a smaller collection well chosen.

The very company of books is educating. As one sits before the bookcase and glances at his favorite volumes, it is as if each said a word or two or suggested a thought. Thus a boy's eye may fall upon his copy of "Tom Brown at Rugby," and in his mind rises the remembrance of the great hare-and-hounds run in which Tom and East and the Tadpole struggled so pluckily, and at last held that delightful little interview with Dr. Arnold; or visions of East's tricks on old Martin. There is no need to open the book—one breathes its healthful air at the mere sight of its title. So from each old favorite there comes a friendly greeting, and we recall the pleasant hours spent in its company.

A great orator said: "Books are the windows through which the soul looks out. A home without books is like a room without windows. No man has a right to bring up children without surrounding them with books, if he has the means to buy books."

THE SANITARIAN.

OCTOBER, 1901.

NUMBER 383.

THE UTILITARIAN PRINCIPLES OF TAXATION AND THEIR RELATION TO ALTRUISM.*

By R. S. GUERNSEY, of the New York Bar.

TAXATION OF WATER—WHAT MUNICIPAL OWNERSHIP HAS DONE AND WHAT IT SHOULD DO.

In discussing the subject of the taxation of water and its means of supply, the principle that should be applied to it is in direct opposition to the present mode of taxation: Imposing the entire burden on householders. According to utilitarian principles, it should not be treated as a merchantable product and dispensed for profit. It is a prime necessity, and should be treated accordingly—that is, it should be liberally supplied for domestic and sanitary purposes at the least possible expense to the people, and charges for it not confined to landlords and tenants, but borne in part by general taxation. To do this the water rate, as well as the tax on its means of appliance, should be at the lowest rate practicable.

The exclamation "As free as water" is an aphorism that does not apply to a household in a community under the modern idea and practice of charging for the water required for household use in municipalities. In practice it is as costly as many luxuries when used to the extent and in the manner necessary for the health, happiness, cleanliness and decency fully demanded in common life. Its cost to the consumer is imposed on the dwelling in a periodical tax by the month or year. The charges for this greatest and most universal necessity of life are now imposed with little regard to the effect they will have on individuals and on the community at large. If these charges in some cases, can be made less, and more easily borne, with the same, or better, efficient service demanded by sanitary conditions, in the name of humanity it should be done! People in cities and villages pay for it more willingly than for any-

*Continued from page 230.

thing else, because it is indispensable, more or less. They scarcely take into consideration its indirect cost so long as the supply is satisfactorily abundant.

Of the prime necessaries of life, water is uppermost in the constant and indispensable demands and needs of persons of all ages and conditions. Under such common circumstances, we think less about its cost to others, so long as our immediate wants are supplied. The first thing that a community now seeks for its general use and convenience is the water supply for household purposes, and this it must have.

There is no other element or necessity for animal and vegetable life that can take its place for good or for evil, for life or for death. When pure, as the rain water standard, it is the acknowledged foundation of food, cleanliness and health. Each person needs about the same quantity.

Its use may be made an active preventative medicine, to conserve the general health of a community. Water spreads contagious and infectious diseases. It will poison the air we breathe and the food we eat. The devastating influence of bad water is more to be dreaded than is famine, and may induce pestilence. It must necessarily be under legislative control and supervision, whether owned by a private corporation or by a municipality or State.

What, then, can be a greater necessity for happiness than plenty of pure water, appropriate to the demands of the highest type and perfection of a civilized community, and what has more need of public control by legislation? It may be had free in many instances, but it costs some labor and care to guard and dispense it. When this is supplied by a city or municipality to its inhabitants for individual use, it becomes costly—not the water itself, perhaps, but the care for its purity and the mode of distribution and the disposition of such portions of its refuse and waste as will endanger the health and happiness of the community at large, as well as the individual who does not know of its dangers to himself and to others, or, if he knows it, is careless or powerless to remedy baneful influences.

Its regulation and supply for public and private use by legislative authority was one of the early legislative enactments of New York (made in 1790), relating to water for the city of Hudson. Many years previous to this, New York City took hold of the subject of its water supply as a municipal duty, and laid a tax for the purpose of providing wells and pumps free for the general use of its inhabitants.

Whatever may be the objections and different opinions as to the municipal ownership of public utilities, all persons are in accord with the desire for the public ownership of the water supply to the inhabitants of cities and villages. This is not because of the prevalence of socialistic feelings in the community, but is founded on the nature of things, confirmed by the growth and acknowledgment of the value and necessity of water and sanitary science for the supervision and control of the public health and welfare. Its origin relative to the supply of water was not prompted by any socialistic feeling. Its comparatively recent extent and utility is because there is no other article or element or common necessity so much required in individual human life, health and happiness, and extends equally to the general welfare of every member of a family, as water. It is the duty of legislators to provide by law every means that can be conceived of in an enlightened age to properly regulate and require its uses. This is now one of the most important matters before the people. It must be conceded that public opinion, founded on experience, decides that it is plainly the office and duty of the public authorities to provide, regulate and supervise the use and disposition of water for public and private purposes. Whether this is done by means of direct public ownership or by contract for its supply, the supervision of its quantity and quality and its disposition always rests with public authorities and they are held responsible for it.

It is now the boast of many who urge municipal ownership of water supplies that it is "self-supporting." This sounds like socialism, but it is directly from a financial standpoint, without regard to the oppression, hardship and injustice involved in its application.

By "self-supporting" is meant the payment of interest on the cost of the works and the expense of maintenance, and perhaps an annual sinking fund of from two to four or more per cent. to pay off the bonds for construction. To do this an annual tax rate is established, apportioned accordingly on the consumers, whether by water meters or otherwise.

The socialistic idea of municipal ownership appears to be that public utilities should be carried on at a profit. This is the main argument of those who favor it. On this principle they acquire and conduct them when opportunity offers, and they cite as examples the municipal ownership of water supplies as against private ownership of them when leased by a municipality, and approve of it.

The report of the Merchants' Association in New York City, in 1900, said: "The Croton system has yielded, up to the end of 1898,

a net profit of $21,473,084. In the year 1898 it paid a net profit of $1,881,843. The ratio of profit is increasing rapidly, and the annual net profit will probably exceed four million dollars in 1910."

By constitutional amendment of New York State in 1874, the prohibition of municipal indebtedness, excepting for county, city, town or village purposes, expressly states that it shall not apply to prevent the issue of bonds to provide for the supply of water, but the tenure of the bonds issued to provide the supply of water shall not exceed twenty years, and a sinking fund shall be created for their redemption by raising annually a sum which will produce an amount equal to the sum of the principal and interest of said bonds at their maturity.

We have already seen that the water charges by the city or municipality is an annual specific tax upon real estate for its supply, and that the water tax or charge is placed on the regular tax roll of taxes on real estate and collected with it if not paid separately when it becomes due.

The water rate for domestic use in all municipalities, whether supplied by leased works or by municipal ownership, is upon water closets and bath tubs, besides the usual other household needs. Whatever the amount of charge, none should be made for the necessary sanitary appliances for cleanliness.

This annual specific tax and charge for water is, in fact, but a small portion of the burden of taxation that the water supply engenders and annually entails upon the owners and users of real estate. This direct tax is now excessive, and should be greatly reduced in specific amount in behalf of justice; also because of the interests of humanity and its being a prime necessary of life.

When assessors value real estate, after the local improvements, including sewers, are constructed, the increased reduction is ascertained by considering the cost of the surrounding improvements and the structures upon the land that affect the market value of the property. The valuation is generally increased much more than the cost upon the specific property. This includes the cost of appliances for water and sewers and water pipes on and about the property. Wells, pumps and cisterns are assessed as real estate, according to their cost.

In ascertaining the annual cost of water supply in a house in New York City, we must count the interest on the cost of putting it in and connecting with the sewer in the street. This will be upward of five hundred dollars for full equipment of a one-family house required in New York, such as faucets, sinks, boiler, wash-

tubs, bath and water closet. The interest on five hundred dollars at five per cent. is twenty-five dollars.

In New York City, where the sewers are thoroughly constructed, the direct assessment therefor upon the property affected by it will average about three hundred dollars per lot of twenty-five feet front by one hundred feet deep. The interest on three hundred dollars at five per cent. is fifteen dollars.

The increased valuation for general taxation of the house property will be not less than the cost of the plant. The cost of the plant for each additional family in one house for like equipments will be about two hundred dollars. The interest and taxes will be increased accordingly. The rooms required for sinks, boilers, wash basins, bathtubs, water closets and washtubs are also to be considered in the cost of the buildings, and for which there is no adequate return by way of rent.

Ten per cent. of the cost of a building in New York is for plumbing and sanitary equipments.

The capitalist (builder) must get interest, by way of rent, on eight hundred dollars or more invested in means of supplying and disposing of water in a sanitary manner in a household of one family. The local tax from the valuation of these improvements in New York City is not less than two and one-fourth per cent. on not less than the cost, and will be about eighteen dollars.

The builder has constructed them by his capital, and they occupy room which he could use and get rent for, which has induced the prevalent condition in tenement house construction. The necessary supply of water for sanitation should be paid for by general taxation, and not by specific direct tax upon its use and application. Let the water tax be only upon the number of faucets required for family uses.

Let this tax be based upon the proportionate cost of the annual operation of the water works, charging that used for public purposes to the municipality, to be paid by general taxation. The ends of justice and humanity would be conserved thereby, and the self-respect of the municipality be inculcated.

The water rates to private users in all municipalities that own the works, New York City included, are regulated and made up to make it at least self-supporting, and to do this the private users are compelled to pay for the entire supply for public use, as well as for the private use of individuals and for waste in the general supply, without ascertaining or calculating or allowing for the supply for public purposes.

Whatever may be the motive for the municipal ownership of other public utilities, for the sake of humanity do not let mercenary gains influence or pervade the supplying of water for individual purposes! Such a policy is too sordid to have a place in an enlightened public opinion.

A beneficent socialism would be willing to supply, at general expense, the water necessary for those sanitary equipments when they are provided at private expense, as they now are. To seek to make a profit by municipal trading in the supply of water used for sanitary and personal wants and needs should be regarded as the acme of cruelty and a disgrace to the age in which we live.

The cost of water supply to a family in New York annually, in interest and direct taxes on the property where it is used, is not less than sixty dollars on a capitalization at five per cent., besides the annual water tax rate, which varies in amount in different boroughs. The water rates in Manhattan and the Bronx are the same, and we will glance at them as an object lesson to illustrate the principle now applied in the taxation of water for family uses.

In discussing the water question in Manhattan and the Bronx, the subject of municipal ownership and its effect on and application to a municipality, and the duties and obligations which such ownership should recognize as belonging to the whole community in the interest of humanity and justice, will be considered.

The policy of the operation and conducting of the Croton water department in New York City has always been, from the first, to make the householders pay to the city a profit on the investment.

From statistics compiled by the Merchants' Association in 1900, it appears that up to 1884 the profit from the construction and operation of the Croton water department—that is, the difference between the revenue and the total expense for construction, maintenance, operation, interest, etc.—was more than nine per cent. on the cost of construction, which included the building of the aqueduct and the Forty-second street reservoir. The additional construction up to January, 1899, added to the total for sixty-seven years, shows a net profit of $21,473,084 on the $86,335,562 of capital invested. The report says that the year 1898 paid a net profit of $1,881,843, being 21.22 per cent., on the city investment. A table is given, showing the annual cost and profit each year from 1865 to 1899. The largest net profit for any one year was 28.62 per cent. in 1886. A deficiency occurred in only one year, 1875. Since 1891 the profit has been above 20 per cent.

The amount of profit in 1898 ($1,881,843) is equal to a tax of two per cent. on a capital of $94,000,000 in a private corporation.

The average cost per million gallons from 1866 to 1898, both inclusive, was $35.06. The city has received an average revenue of $52.87 per million gallons for all water supplied by the Croton system since 1865. Only the actual cost of distribution to the city should be charged householders. At present the cost is $10 for every million gallons distributed.

When Croton water was first proposed to be introduced into New York City in 1832, it was suggested that a tax of two dollars annually be imposed on each house, because the fire insurance rates would be much less. The sum of eight dollars per annum should be paid by each family for the use of the water.

Up to the time of the introduction of Croton water, in 1842, there were no water closets in houses, no stationary washtubs, no bathtubs, no subterranean sewers, and practically no sanitary requirements on householders and builders for the uses of water.

The sanitary equipments, as they are in use now, were then unknown to New Yorkers.

The cost of the water supply in Manhattan and the Bronx at its present scale is at the rate of more than two dollars per head for every one of the population in these two boroughs, including all occupants of hospitals, charitable and penal institutions, the population being 2,050,000 and the reported water rents collected and charged for 1898 was $4,416,759.

This tax is at a much greater rate than is the tax imposed on any corporation of public utility, either for transportation or lighting or anything else. If our street railroads should be taxed five per cent. on the gross receipts and allowed to collect it from passengers in addition to a five-cent fare, it would be only one dollar and eighty-two cents a year for each passenger who rides both ways every day in the year.

The amount of annual profit, (22.22 per cent.), when considered as a tax on a charge of ten dollars for water, is unreasonable.

The private users of Croton water for domestic and sanitary purposes now pay for all that is used in Manhattan for public purposes, in public buildings, school houses, police stations, parks, fountains, sprinkling streets, fire departments, charitable institutions and the like. There are two ten-inch mains that supply Ward's and Randall's islands with water.

There are over ten thousand fire hydrants in the streets in the two boroughs that were built at the expense of the Croton water department for protection against fire and for sanitary purposes of street cleaning.

Up to the present time the water rates in New York City, in Manhattan and the Bronx, have been based upon the entire quantity of water supplied by the works for all purposes, including leakage, waste, etc., and are made up so that the entire cost of operation of the works may be not only self-supporting, but show a profit annually, as appears by the report of the Merchants' Association in 1900.

There are one hundred and twenty thousand taps to the Croton water supply pipes. Thus one hundred and twenty thousand pieces of land and their improvements have to bear all the Croton water taxes of over four and a half million dollars annually. To do this and make a profit, the rate of the tax is calculated on the entire supply of water, including that for public purposes and uses in Manhattan and the Bronx! This is a striking example of the taxation of the few for the benefit of the many, and there are more than two million inhabitants supplied with water daily from that source, and more than one-half million more persons who are transient and who get their daily supply in Manhattan. This is the operation by municipal ownership of the Croton water in New York City.

The total quantity of water supplied in the two boroughs in 1899 averaged 117 gallons per capita per day of 24 hours. The average night rate was 81.86 per cent. of the day rate of 24 hours. Thirty gallons per capita of the daily supply was estimated to be for domestic purposes.

Out of twenty-one cities in the United States, eighteen of them used less than 20 gallons per day per capita, and this also included that used by them for public purposes and waste, for which there was no allowance. In comparing the quantity used or necessary per capita in localities, the sanitary equipments in use are all important.

Meters are in all stores, workshops, hotels, manufactories, public edifices (not municipal), at wharves, ferry houses, stables, and in all places where water is furnished for business consumption. This is under the act of 1882. For many years, and at present, any person can have a meter in any building or place where he may ask for it. Tenement house owners have availed themselves of this privilege. The present rates for meters have been in operation since 1882.

The present charge for meter use is ten cents per one hundred cubic feet, which contains seven hundred and fifty gallons—seventy-five gallons for one cent. Now, estimating that seventy-

five gallons will supply four persons per day, it will be $3.65 per year, or less than one dollar per capita, for the proper charge, calculated on the present supply.

The meter rates, based on the quantity actually used, would be 62.25 per cent. less than at present, which would make it 3 77-100 cents per 100 cubic feet of 750 gallons. The charge for domestic use, if based on the meter rate, should be much less than the present scale of charges.

The rates should be based, at least, on the actual use, and would not include the loss of or public waste of water. This would make the charges 37 75-100 per cent. of the present rate.

The charge for domestic use is much higher now than for meter use.

The Croton and Bronx aqueducts delivered 245,700,000 gallons daily to the city in 1899. This is 90,680,500,000 gallons yearly. The amount of revenue derived therefrom was in 1898 $4,416,759. This is at the rate of 12 cents per 750 gallons. At the charge for meter rates, ten cents for 750 gallons, it would be much less.

The meter charge is made up for trade purposes and based on the same rate for the total water supply, which includes public uses, waste, etc., and is at the same estimated cost as is applied to houses and uses for domestic purposes. If it is desirable to supply it at actual cost, it would be at a much less rate, after making proper deductions to ascertain the cost.

The quantity of Croton water used for public purposes can only be estimated because of lack of other data. The total quantity of water delivered in the city daily from the distributing reservoir is about 117 gallons per capita. Of this the quantity metered is 25 gallons per capita, and the unmetered has been estimated at fifteen gallons per capita. This leaves 77 gallons per capita per day unaccounted for. This latter includes the water that is used for public purposes as well as the waste from the mains and supply pipes.

Of the total quantity of water delivered by the Croton and Bronx aqueducts, 37.75 per cent. is used and 62.25 per cent. unaccounted for, which includes that supplied for some public purposes, but not all. The water rate for dwellings is in no case less than four dollars on one story of less than 16 feet front, and six dollars per year for two stories of a 16-foot-front house, and one dollar additional for each story where it is not occupied by a separate family, in which case there is an additional charge of one dollar to such class of houses. Bathing tubs, beyond one in each

house, three dollars per year; combination washtubs, capable of use for bathing, are charged the same rate. Water closets in dwellings are charged two dollars per annum for each seat.

The charges for frontage are classed from under 16 feet, 16 to 18 feet, 18 to 20 feet, 20 to 22 1-2 feet, 22 1-2 to 25 feet, 25 to 30 feet, 30 to 37 1-2 feet, and from 37 1-2 to 50 feet, and are increased one dollar for each class over the preceding, and one dollar for each story in addition to one story, up to six stories. All tenements that exceed fifty feet in width are subject to special contract.

Bake shops, liquor saloons, lunch rooms, hotels, etc., are charged extra, and thus there is an indirect occupation taxation. The revenue from this water supply is now $4,416,759 annually, which, if capitalized at four per cent., would be $110,000,000. The operation of the water works is included in that of public works.

The profits made by the operation of the Croton water department have been applied to a sinking fund and held for paying the bonds contracted in its construction. If these profits were applied to reduce general taxation, it would be much more beneficial to the public. Real estate, that now bears all the burden of this profit, would be relieved in part from its immediate effect, and not now be paying for the future supply of water for coming generations. The construction of new streets and sewers for posterity is all that should be required of the inhabitants at the present time.

When water mains or pipes are laid in streets by the authority of a municipality, the property owners get no pay for the use of the streets for such purposes or for the use of sewers that are put in the streets.

It is optional with the authorities, who issue bonds for the supply of water, how the annual amount for the payment of the interest and sinking fund shall be raised, whether in whole or in part by general taxation or by the charge of water rates sufficient to carry the whole or any part of the indebtedness. A sinking fund of three per cent. annually, in addition to the interest, will pay off such bonds within twenty years and be within the constitutional debt limit.

The capital and property of private corporations that supply water to cities and villages should be exempt from taxation, at least so far as it is applied and used for such purposes.

The meter charges for business and manufacturing purposes should be about twelve cents for seventy-five hundred gallons to cover the actual pro rata cost. All these should be deducted from the operating expenses before making the scale of charges for domestic purposes on the operation expenses.

In 1896 the revenue was as follows:

Unmetered	$1,833,212
Metered	2,089,840
Total	$3,923,052
Operating expenses	643,000
Surplus profit	$3,280,052

If the net profit is taken off, the present rates would be about 22 per cent. less than now.

With the estimate of twenty gallons per capita for five persons in a family each day, the cost would be less than four dollars annually. As the present rate of charges is made up of the interest on the cost, the waste and the supply for public places, and the repairs and the total quantity used, so as to make it pay for itself and give a large profit, it is at least double what it should be if based upon the quantity actually used for domestic purposes.

In fixing the charge to consumers for domestic purposes, the cost of the expense of operating should be the maximum, and so should the quantity supplied; from this should be deducted the quantity used in city buildings, etc., as nearly as practicable. Each street hydrant should be charged to the city, about forty dollars a year. The quantity used for street cleaning and park and fountain purposes should be deducted.

When water works are leased from a private corporation, the public authorities usually specify how much shall be paid for each fire hydrant in streets and how much for fountains and the needed supply for public buildings and uses, and the number of private consumers, and ascertain the cost of the works, upon which they expect to pay annually at the rate of at least five per cent.; besides, the municipality provides its own attendants and operatives, at the general expense, it may be, or it may only be proportionate to the quantity used, and then apportions the annual water rate among consumers according to their uses, but without any attempt at making a profit for the benefit of itself. This usually makes the water rate higher in some cases than it would be if the works were owned and operated by the municipality. The larger the number of consumers, the less will be the rate, for the cost of the works and their operation is proportionately not so much more for a greater number, when the supply pipes are laid, than for the use of a small number.

The interest on the bonds for building and extension of the work and the sinking fund, if any exist, should be borne by general taxation of property and not paid for by water rates. No sinking fund should be allowed. No charge should be made for a water closet, a washtub or a bathtub, one in each family, whether in private dwellings or in tenement houses. The rate in New York City for each supply faucet would then be about two dollars a year and one dollar for each extra supply faucet for each family. The house room these sanitary appliances occupy is regarded as of considerable importance in the construction of tenement houses and in hotels and apartment houses. Their marked absence in the lower class tenements is proof of this.

The New York City Tenement House Commission of 1894 reported that in a population of 255,033, which was investigated, only 306 persons had access to bathrooms in the houses where they lived. The people had to use tubs in their living rooms, which were so crowded, and often so poorly supplied with water, that bathing was next to impossible.

The commission of 1900 did not find tenement houses any better supplied with water and bathing facilities; hence the law of 1901 specifically requires the supply of water and water-closets in them.

In municipalities that boast of the small quantity of water used per capita per day there is a lack of proper sanitary equipment.

Free public baths are deemed a great boon to the health and comfort, in hot weather, of a large class of persons. Free private baths would be much more for the public welfare.

This reduced water rate and the multiplication of the sanitary comforts and conveniences would not necessarily require or need that more water be used for cooking purposes than there is now. Any increase of the uses in families would be for personal cleanliness and sanitary purposes.

Such a utilitarian policy as is here suggested in the conduct of a water supply system, either when leased or owned by a municipality, is on a line with the growth and development of modern civilization. Every scale of price that is now in force needs reconstruction.

Let it go on record now that every one of the municipalities that supply water by municipal ownership of the works or by leasing them for the supply, levies all tax, directly or indirectly, for the use of water for bathtubs, water-closets, and for other sanitary purposes, and charges the consumers for the public use or waste of water where operated by a municipality.

The rate of charges for miscellaneous and specific purposes not in usual and general use and not required by all, can be at about the same rate as now—that is, based on a small profit on the supply of water, whether estimated or by metered use. This will so far be in accord with socialism as to profit. Let humanity recognize the individual wants and needs in its most universal demand.

The present provided facilities for the necessary water supply from the Croton are ample for any increase, for many years, in the number of inhabitants in Manhattan and the Bronx. The public supply will not necessarily be any larger than at present. The water now used for power purposes can be discontinued in many cases, and other power substituted. All this is metered, and the quantity used can be easily ascertained and withdrawn when desirable.

The fixing of a scale of water rates is entirely in the hands and power of municipal authorities, whether the works are held by municipal ownership or leased from a private corporation. In New York City the charter (section 473) confers this power on the Board of Aldermen, on the recommendation of the Commissioner of Water Supply. No other legislation is required.

New York City is where this reduction is needed most, and the inhabitants there should be the first to move in the direction of less tax on water and on its means of appliance, and thus provide an object lesson in the social progress of the age.

(*To be continued.*)

WATER PURIFICATION WITH OZONE.

The New York "Sun" reports, July 28, that a new method of sterilizing a city's water supply is being successfully operated in Russia, and it was described at the annual meeting of the American Association of Water Works Engineers recently held here, in a paper forwarded by Nicholas Simin, chief engineer of the city of Moscow, where the system has been adopted and according to M. Simin is universally commended.

The plan is to sterilize the water by the introduction of ozonized air, and it is contended on its behalf that it destroys all the bacteria in the water and makes it at comparatively small cost absolutely safe for drinking purposes. So far, the system has not been adopted outside Russia, but M. Simin contends that in this country conditions are more favorable than anywhere else for its adoption, and he advocates its introduction here as tending to solve all problems in regard to contaminated water supplies.

The system is based upon the principles that ozone burns all organic matter with which it comes into contact in water, including bacteria and their vital products; that with water which has been freed previously of suspended matter the destruction of the bacteria is equally efficient, no matter how great may be the number, and that the pathogenic bacteria are among the first to be destroyed.

The purification of the water in this way is simply a development of and an improvement upon the ordinary aeration of water by means of atmospheric air. The air, before coming in contact with the water, is subjected to a series of electrical discharges which convert the oxygen from diatomic oxygen to triatomic oxygen, which is ozone, and is remarkable for its power of oxidizing organic matter, including the bacteria in water. The cost is put at $6.25 for each million gallons, or in large plants even less.

Extensive experiments in the system have been made in France, Germany, Holland and Belgium. The necessary removal of suspended matter is accomplished by using a small quantity of coagulant for mere clarification, M. Simin says. Ozonization oxidizes not only the bacteria, but all organic matter. The water is rendered colorless, sparkling and odorless. It has an agreeable and refreshing taste and there is introduced into it no foreign matter except oxygen, which, of course, is beneficial.

FOMITES AND YELLOW FEVER.

By A. N. Bell.*

The purpose of this note is to invite attention to some personal observations and verified knowledge of the agency of fomites in the propagation of yellow fever, overlooked or ignored by expert bacteriologists in recent researches and reports.†

* Read at the Meeting of the American Public Health Association, Buffalo, N. Y., Sept. 16-21, 1901. Published in advance of Vol. of Proceedings, by permission of the Secretary.

†The Etiology of Yellow Fever. *Yellow Fever produced by the bite of Culex fasciatus.* By Major Walter Reed, Surgeon, U. S. Army; Dr. James Carroll, Contract Surgeon, U. S. A.; Dr. Agramonte, Contract Surgeon, U. S. A., and Dr. Jesse W. Lazear, Contract Surgeon, U. S. A. Read at the Pan-American Medical Congress, Havana, February, 1901 (Journal American Medical Association). Sanitation and Yellow Fever in Havana. Report of Major V. Havard, Surgeon, U. S. Army, Chief Surgeon, Havana, February 8, 1901 (Sanitarian, July and August, 1901). The Transmission of Yellow Fever by Mosquitoes. By George M. Sternberg, Surgeon-General, U. S. Army (The Popular Science Monthly, July, 1901). The Propagation of Yellow Fever; Observations Based on Recent Researches. By Walter Reed, M. D., Surgeon, U. S. Army (Medical Record, August 10, 1901).

Assuming that every member of this Association is familiar with the substance of the investigation and reports here referred to, demonstrating the agency of a certain species of mosquito, as an intermediate host in the transmission of yellow fever, reference will be made to such portions of them only as appear to be in conflict with, or deficient in the recognition of, fomites as the hitherto accepted cause of many outbreaks of yellow fever, inexplicable by the alleged exclusive agency of mosquitoes.

I do not question the accuracy of the researches demonstrating the agency of the mosquito as an intermediate host and agent in the transmission of the infection, but I deny the sufficiency of this agency to account for the supersusceptibility to, and the retention of, yellow fever infection by unclean localities under climatic conditions favorable to the propagation of the disease; houses and ships in which yellow fever has prevailed and that have not been thereafter cleansed and aerated; certain kinds of ballast and merchandise, taken from infected localities, or infected vessels, or from localities where and when yellow fever prevails; personal clothing and books that have been long exposed in infected vessels or houses and packed therein without previous disinfection. Verifiable cases and even outbreaks of epidemics have occurred in connection with such conditions when no mosquitoes have been in evidence, nor any precursory *case of yellow fever*—necessary according to the showing of the experts—whose infected blood must be sucked and transmitted as a condition of the propagation of the disease.

Concisely summed up and endorsed by Dr. Sternberg:

"The inference drawn by Dr. Reed and his associates, from the experiments thus far made, was that yellow fever may be transmitted by mosquitoes of the genus *Culex*, but that in order to convey the infection to a non-immune individual the insect must be kept for 12 days or longer after it has filled itself with blood from a yellow fever patient in the earlier stages of the disease. In other words, that a certain period of incubation is required in the body of the insect before the germ reaches its salivary glands, and consequently before it is able to inoculate an individual with the germs of yellow fever. This inference, based upon experimental data, received support from other observations, and which have been repeatedly made with reference to the introduction and spread of yellow fever in localities favorable to its propagation. When a case is imported to one of our Southern seaport cities, from Havana, Vera Cruz or some other endemic focus of the disease, an interval of two weeks or more occurs before secondary cases are

developed as a result of such importation. In the light of our present knowledge this is readily understood. A certain number of mosquitoes having filled themselves with blood from this first case, after an interval of twelve days or more bite non-immune individuals living in the vicinity, and these individuals, after a brief period of incubation, fall sick with the disease; being bitten by other mosquitoes they serve to transmit the disease through the 'intermediate host' to still others. Thus the epidemic extends, at first slowly, as from house to house; then more rapidly, as by geometrical progress."

But whence and how the first case, whose blood is necessary for the mosquito before it can become intermediary—how did he become infected? True, part of the title of the Army Board report is, "Yellow Fever *Produced* by the Bite of *Culex Fasciatus*." But evidence is wanting to show it. It is transmitted, but *not* produced.

Nevertheless, the board concludes:

"Yellow fever is not conveyed by fomites, and hence disinfection of articles of clothing, bedding or merchandise, supposedly contaminated by contact with those sick with this disease, is unnecessary.

"A house may be said to be infected with yellow fever only when there are present within its walls contaminated mosquitoes capable of carrying the parasites of the disease."

And to these conclusions, Major Havard adds:

"Disinfection becomes completely useless, since there are no infectious germs to destroy. In a house where a case of yellow fever has been under treatment, the problem is how to reach the mosquitoes which have become infected by biting the patient and are still lurking in the vicinity. . . . Since we may assume in practice that the infectious germs do not exist outside of a man or mosquito, the disinfection of trunks and baggage on account of yellow fever is no longer justifiable; all that is required will be the examination of non-immunes within the five days immediately following their last exposure to infection, the danger of transmission being from their own persons and in no wise from their clothing or baggage. Ships, like houses, are liable to harbor infected mosquitoes and will continue to require fumigation."

Moreover, he refers to the non-contagiousness of the disease as a "*discovery* by Major Reed and his associates, conclusively proved by direct experiment that recently soiled linen, bedding and effects of all kinds are powerless to convey the disease. This discovery," he says, "must bring about a revolution in our methods of disinfection and quarantine in yellow fever."

This knowledge of the non-contagiousness of yellow fever has been acted upon for more than half of the past century by physicians of actual experience in connection with yellow fever everywhere. The "direct experiment" of collecting a quantity of recently soiled linen and bedding by yellow fever patients and sleeping in them, was but a feeble imitation of what one of the surgeons of the French frigate *Gomer* did in the naval hospital at Pensacola in 1838. For besides the bed and clothing in which he slept, and from which the dead body of a yellow fever patient had just been taken, the ward was full of cases of yellow fever. This he did in order to show the comrades of the sick, required to nurse them, that there was no danger in their so doing. The incident was described to me by the late Dr. Isaac Hulse, U. S. Navy, who was surgeon of the hospital at the time. My own personal experience with yellow fever at the outset was scarcely less explicit, besides its subsequent relation to fomites—an infected ship.

Fifty-four years ago, being an assistant surgeon in the Navy, during the war with Mexico, I was ordered to a hospital on Salmadina Island, in the vicinity of Vera Cruz, constructed of rough pine boards, where, in a "ward" about twenty feet square, I had for room-mates for a period of six weeks from two to six patients with yellow fever. We took our meals in the same room. In an adjoining room, about thrice as large, with an open doorway communicating, without a door, I had under my care for the same length of time from ten to forty cases—there was a daily increase in the number; and, during the last two weeks of the period, about forty more in a tent twenty feet distant, who were cared for during the day time by two visiting surgeons attached to vessels anchored near by. My health was excellent during the period, but at the end of it I was transferred to the infected frigate *Mississippi*, on board which ship most of the cases originated, in charge of as many of the sick as, in my judgment, could be safely taken on board—there were 127—under orders to proceed to Pensacola and transfer them to the naval hospital at that place.

My fourth night on board the *Mississippi* was a restless one, with symptoms of yellow fever. Within the forty-eight hours before and subsequent to my attack twelve other new cases had developed—all of them of new-comers to the ship, some from the hospital attendants, and the others transferred from vessels of the squadron.

There were mosquitoes in the hospital during the whole period of my service there; they were also present in all the vessels of

the squadron. But, admitting their agency in the transmission of the disease, the *Culex* seems to have been almost exclusively confined to the *Mississippi*, where most of the cases occurred.

In the afternoon of the day following my attack in the night, the ship having arrived at Pensacola, all the sick, myself included, were transferred to the naval hospital. Six weeks thereafter I returned to duty on board the same ship, she having been meanwhile "broken out" and limed. If mosquitoes were still present they were not in such evidence as to attract attention. Three weeks later, October 17th, she again put to sea for Vera Cruz. On the fourth day out a case of yellow fever occurred on board, in a non-immune received on the day of her departure from Pensacola. She arrived at Vera Cruz October 22d, at the beginning of the first norther of the season—ever welcome as frost in New Orleans as an estop to yellow fever. Up to this time the fever had been increasingly prevalent in the city and squadron. The norther continued about a week with comfortably cool but rainy weather. Almost immediately following there was notable abatement of the fever on shore and in the squadron generally. But not so on board the *Mississippi* to non-immune new-comers; one rarely escaped an attack within five days. And so she continued to the end of her service in the Gulf, went North, and was subjected to a freezing temperature; explicable, perhaps, by the possible continued presence of *Culex fasciatus*.

But hardly so in the case of the U. S. Frigate *Susquehanna*. This ship, after more than two years' service in the Mediterranean, October, 1857, was ordered from Spezzia to San Juan de Nicaragua, where she arrived early in December; having touched by the way at Genoa, Madeira and Key West. She remained at San Juan until the first of the following April, having had during the whole period of time she lay there a constantly increasing sick list of a "precursory" fever. At first intermittent, then remittent, but all recovered until March 20th, when a case became malignant with symptoms of yellow fever, and died; other cases followed. The ship put to sea April 1st, and on the 5th arrived at Port Royal, Jamaica, with one hundred and six officers and men down with yellow fever.

Most of these were sent to the hospital, and on the third day afterward she sailed for New York, where she arrived April 15th, with 51 cases on the sick list.

The remarkable feature in this instance is, that at San Juan, where the yellow fever first appeared on board the *Susquehanna*,

there was no yellow fever, and the disease had never been known to occur there. As before stated, she had been more than two years on service in the Mediterranean, but with no extraordinary sickness on board. She had had yellow fever on board during service in the Gulf Squadron the summer before she was ordered to the Mediterranean, nearly three years before, and was supposed to have been thoroughly cleansed before she was ordered to the Mediterranean station. But, as the sequel shows, she still retained the germs of the disease (or mosquitoes?) until she returned to the conditions of the yellow fever habitat at the Port of San Juan.

It is conceivable that the advocates of the exclusive instrumentality of the mosquito in her case may contend that she might have shipped the *Culex* when she touched at Key West. But there was no yellow fever there at the time, and no case intervened between that time and the first unequivocal case on board the *Susquehanna*, March 20th, after several weeks' prevalence of a *precursory* fever —a not very unusual feature of yellow fever observed on other occasions; and prominently so at the first outbreaks of the disease in Rio and Callao.

In 1849-52 the harbor of Rio was more or less crowded with vessels from American ports, most of them destined for the Pacific, on account of the California "gold fever." How many of them infected with yellow fever, contracted while in service as storeships or otherwise in the Gulf during the Mexican War, two or three years previous, when yellow fever was exceptionally prevalent there, arrived at Rio or touched at other Brazilian ports where yellow fever for the first time appeared is problematical, but that some were is beyond question. My interest in the subject on the first occurrence of yellow fever in Callao led me to make some inquiry.

I ascertained that about the middle of the year 1851 the steamer *New World*, after having lost more than half her crew by yellow fever in Rio, on her way to California, touched at Callao. The steamer *Pinto* also, during the same season, lost several of her crew there, proceeding to the Pacific and arriving at Callao in April, 1852. Soon after her arrival a mild form of a peculiar fever broke out in Callao and Lima, which the natives called "pelusa," similar to the precursory fever which prevailed in Rio in 1849; it was called "polka." In both instances the disease speedily developed yellow fever. And considering the voyages, so inconsistent with the continued presence of mosquitoes on board ship, it is hardly conceivable that they had anything to do with either its introduction or transmission.

The persistence of yellow fever-infection under conditions commonly fatal to mosquitoes is particularly well shown in the history of the U. S. Steamer *Plymouth.* She first became infected at St. Thomas in the summer of 1878. In November following she was sent to Portsmouth, N. H., and about a month afterward to Boston, where she remained four months. Meanwhile everything was removed from the ship; the crew were transferred, and she was fully exposed to intense cold for a month—for ten days of that time in dry-dock, with a temperature at times below zero. The water in the tanks was frozen, as it was in basins put in the store rooms of the ship, and for several days after the fires were rekindled on board the cold continued so intense that the water froze in the bilges at night. One hundred pounds of sulphur was burned below decks, the fumigation extending over two days; the berth deck, holds and store-rooms were thoroughly white-washed with a mixture of lime and chloride of lime. March 15, 1879, she left Boston for a cruise in the West Indies. On the night of the 19th, in a severe gale of wind, the hatches had to be battened down and the berth deck became very damp and stuffy. On the morning of the 22d (she had not touched at any port) Richard Saunders, machinist, was sick, but did not report until afternoon, when he had violent headache and fever. During the night of the 22d, Peter Eagan, boatswain's mate, was taken suddenly and violently sick with the same symptoms. On the 23d, at sea, latitude N. 27. 48, longitude W. 57.59, the surgeon (Woolverton) reported both cases yellow fever, and recommended that the ship proceed no further on that cruise. The first case recovered; the second died on the third day of illness. The ship's course was changed to northward, and she arrived at Portsmouth, N. H., April 7th. No new cases appeared after she turned.

"I am convinced," said the surgeon, in his report, "that the fever infection is confined to the hull of the ship, and especially to the unsound wood about the berth deck; and that while the *Plymouth* is a safe and healthy ship in a temperate climate, she cannot, for the present, be sent into a tropical climate without the certainty of an outbreak of yellow fever occurring on board; and that no precautionary measures whatever could avail to avert such a result."

Soon after her return to Portsmouth, April 17th, she was surveyed by a board of medical officers, who reported that:

"After careful consideration of all the facts, we have arrived at the conclusion that the infecting virus which gave rise to the last

outbreak of fever must have been preserved in the rotten wood of the berth deck, or in the bedding or clothing of the crew."

Of Ballast.—July 12-18, 1878, yellow fever broke out on board the U. S. ship *Vermont*, at the Brooklyn Navy Yard, of which there were eight cases, with three deaths. According to the investigation and report of a board of medical officers of the Navy, "the disease seems to have originated from the ballast of the bark *Juanita Clar*, which left Havana May 1st. This ballast, quarry clippings and sand, was deposited on the dock on either side of the *Vermont*, and about one hundred yards distant from her." On this report the ballast was promptly disinfected and covered over with fresh earth, after which there was not another case.

Of Personal Effects.—During my service as medical superintendent of the floating hospital in the Lower Bay of New York, in September, 1862, I was sent for by one of my colleagues of the Brooklyn hospital for consultation in a suspected case. I there found an unequivocal case of yellow fever, who died the third day thereafter. She was the widow of a seaman who had died in New Orleans two or three months before, whose clothing she had received and washed four days before she was taken sick.—Incidentally, it may here be remarked, this was when General Butler was in command at New Orleans, when, it has been frequently alleged, there was no yellow fever at that place. On the contrary, though there was no commerce with Havana or other yellow fever ports during General Butler's administration in New Orleans, "there were two reported deaths by yellow fever in the civil population, and about one hundred cases in the river fleet."—Prof. Stanford L. Chaillé, M. D. (SANITARIAN, August number, 1882).

Not long after the case in Brooklyn, I met and had occasion to relate it to the late Dr. William Johnson, Surgeon U. S. Navy. He expressed no surprise, but related a still more strongly illustrative case of himself.

On the termination of a cruise on the west coast of Africa, some years before, when yellow fever occurred on board the ship to which he was attached, he packed his books in a barrel and so left them for about three months after they had been received and his arrival home. He then proceeded to unpack them, and three or four days thereafter he was taken with yellow fever and came near dying.

I have no need to be told that this recital is an epitome of ancient history. It would be easy to extend it and quote reports of outbreaks in the Gulf States in recent years, with which contemporary

observers are familiar; but I do not deem it necessary. Such occurrences have been the foundation of our most intelligent quarantine practice, both State and National, during recent years, and with such results as, in my judgment, justify their continuance.

Moreover, with regard to the relation of unclean localities, as well as foul ships, I think the remarks of John Simon, in his report to the commissioners of sewers of London, in 1854, with reference to cholera, are even more pertinent to yellow fever, and no less suitable to-day than they were fifty years ago:

"The specific migrating power, whatever its nature, has the faculty of infecting districts in a manner detrimental to life *only when their atmosphere is fraught with certain products susceptible, under its influence, of undergoing poisonous transformation.* . . . Through the unpolluted atmosphere of cleanly districts it migrates silently, without a blow; that which it can kindle into poison lies not there. To the foul, damp breath of low-lying cities it comes like a spark to powder. Here is contained that which it can quickly make destructive—soaked into soil, stagnant in water, griming the pavement, tainting the air—the slow rottenness of unremoved excrement to which the first contact of this foreign ferment brings the occasion to changing into new and more deadly combinations."

THE RELATION OF ANIMAL DISEASES TO PUBLIC HEALTH.*

By Dr. Don D. Grout, of Waterbury, Vt.

The average physician takes pride in his ability to successfully treat disease. Many excel in diagnosis, too few are thoroughly posted in etiology, and a still smaller number ever trouble themselves about the source from which the cause of disease emanates.

Whatever is capable of damaging the structure of any organ or tissue of the body, or of interfering with its functions, may be the cause of the disease. This definition implies that such causes are numerous, and that of many science is ignorant.

To give a succinct account of them is therefore difficult. It is not within the province of this paper to attempt anything of the kind, but to call your attention for a few moments to a prolific and common cause of disease in the human family, the transmission of animal diseases to man. All civilized races of the globe have

*Read at the Vermont Health Officers' Meeting, Burlington, July 10, 1901.

surrounded themselves with domestic animals. We have the cow, the horse, the pig, the sheep, the goat, the dog, and others; each and all of them have diseases that are easily and frequently transmitted to mankind.

When we consider the intimate relations sustained between man and our domestic animals, the only wonder is that we do not more frequently suffer disease contracted from such sources.

Of all domestic animals known none is so intimately or closely related to the human race as the cow. We are veritable parasites on this animal. We milk her as long as she will give milk, and drink it; then we kill her and clothe ourselves with her skin; we comb our hair with her horns and fertilize the fields with her dung, while her calf furnishes us with vaccine virus for the prevention of small-pox. The cow has redeemed us from that dreadful scourge. But it is more than possible that a greater scourge is continued to us by the same animal. Strange it would be indeed, if, under all these circumstances, we did not acquire from her some malady.

As the magnitude and gravity of this subject is but little appreciated, it will be best introduced by stating in a tabular form the diseases of domestic animals that are known to be communicable to man. We have:

1. Glanders and farcy in horses, etc.
2. Canine madness, rabies in dogs, cats, etc.
3. Malignant anthrax in all domestic animals.
4. Tuberculosis in all animals.
5. Malignant cholera in all animals.
6. Milk-sickness in all animals.
7. Small-pox in all animals and fowls.
8. Diphtheria in animals.
9. Scarlet fever in various animals.
10. Possibly typhoid fever in sucking animals.
11. The plague, which is a disease so common to man, monkeys, and rodents, and is so equally shared by them that no one knows whether it was primarily a human disease or a rat pest.

To enter upon a consideration of the pathology of these diseases would require more time than is at our disposal, but it will be well to consider some of the ways in which a few of them are transmitted to man.

Dr. Law says that "glanders and farcy, which so remorselessly ravaged the cavalry regiments and mule trains during the war of the rebellion, was, at the return of peace, scattered widely over the continent.

"In country districts we see it continually cropping out and whole studs falling victims to its ravages, while in city car stables hundreds have not infrequently been slaughtered to arrest the progress of the disease. The subjects of slight chronic attacks are frequently taken to a distance and sold as sound animals to unsuspecting purchasers, whose health and lives are thus too often sacrificed to satisfy the cupidity of an unscrupulous vender; for the terrible malady is as painful, loathsome and fatal to the human system as to the equine, and every veterinarian of extensive practice can adduce instances in which men have perished miserably from equine infections.

"Human glanders has been recognized for nearly a century as one of the most loathsome and fatal of diseases. It is usually contracted from the horse or mule by accidental inoculation in wounds, and consequently happens almost wholly among those who have the care of horses, and is therefore most common in man in the countries where it is most prevalent in horses. In Montana and other Rocky Mountain States it has been epidemic.

"Malignant Anthrax.

"In all forms of malignant anthrax in animals, we find an infecting material which is not only deadly to quadrupeds, birds, and even reptiles and fishes, but which may be successfully inoculated from any one of these upon the human subject. The malady when conveyed to the human being is a very deadly one, whether it shows itself on the surface in the form of malignant pustule or internally, as carbuncular, sore throat or intestinal anthrax. In this country it prevails mostly among butchers, tanners and workers in hair, but is also well known as the result of consuming the flesh of infected animals. Infection from simple contact is by no means uncommon.

"Where the disease becomes widespread, the resulting mortality may be excessive, as when in 1770, 15,000 men died in six weeks in San Domingo from eating the diseased beef. Cooking is a very insufficient protection, as the spores have been shown to survive a boiling temperature, and in particular cases, even 300 degrees F., and a whole family were poisoned by beef that had been boiled for hours. Further, and contrary to what holds with most other forms of virus, it is not essential that the skin should be broken to permit of absorption. Frost has no influence on its potency, and animals have been known to be fatally infected by licking the frozen blood from a stone-boat when the temperature was below zero.

"Infected pastures have been known to maintain their infecting qualities for six years in succession and to yield hay which continued to infect animals when fed to them at a distance from such pastures.

"Milk-Sickness—The Trembles.

"Our best veterinarians claim that the great importance of this disease has failed to be recognized, mainly because its source is to be found in certain backwoods districts rarely penetrated by those who preside over our medical literature and because it gradually recedes before the advance of improved agriculture.

"Many medical men indeed express grave doubts as to its very existence. Yet the history of the malady is so circumstantial and clear that a doubt as to its specific nature is eminently disingenious.

"In its source in unimproved marshy localities it closely resembles the malignant anthrax, also in its communicability to all animals, but it differs essentially in that it fails to show local anthrax lesions, in place of which it expends its energy in nerve centres, producing great hebetude and loss of muscular power. According to Dr. Phillips it is characterized by the presence in the blood of a microzyme, like that seen in relapsing fever.

"The germ is probably derived from the drinking water or the surface of vegetables, as certain wells are found to infect with certainty, and the disease has been repeatedly produced by feeding upon particular plants (Rhus toxicodendron, etc.). That these plants in themselves are not the pathogenic elements is shown by their innocuous properties when grown in places out of the regions of milk-sickness infections. It seems altogether probable that here, as in anthrax, we are dealing with a microzyme which has developed pathogenic properties and which can be reproduced indefinitely in the bodies of living animals. The great danger of potency is through the flesh and milk and through manufactured products of the latter, butter, milk and cheese.

"Some even hold that in animals giving milk the system does not suffer materially, but that it is saved by the drainage of the germs through the mammary glands, and that thus a milk-sick cow may remain for a considerable time unsuspected, while her milk, butter and cheese are conveying mental and physical decay and death to many human beings near and remote. For the disorder proves as fatal in man as in animals, and if in particular cases it fails to destroy life, it usually leaves the subject in a condition of hebetude and physical weakness that makes life miserable.

"Question of Tuberculosis.

"In considering in a brief way a few of the diseases common to, and transmissible from animal to man, I have designedly left until the last the question of tuberculosis, it being one, at the present time, of more than ordinary interest to the average Vermonter. It is a disease that affects nearly all of our domestic animals. Cattle suffer more than any other domestic animal, and tuberculous cattle are especially to be dreaded, seeing that they furnish so much food for the consumption of men. Statistics show that from 5 to 8 per cent. of the cattle in our northern States suffer from this disease, while in some localities 50 per cent. or more are tuberculous. The question whether the bacillus which produces the disease in man is identical with that found in cattle has always been one of very great importance. Upon the affirmative settlement of the question rests the possibility of the transference of the disease from animals to man and man to animals. It has been generally believed by scientists from the first that the species of bacillus found in man and cattle are the same. The apparent difference that may exist may be accounted for in the difference in environment. It has been demonstrated that the tuberculous material from man may produce the tuberculous disease in cattle, and there have been many instances that point to the conclusion that the disease has been transmitted from cattle to man. If the disease can be carried from one to the other, there can be no question that the bacillus is the same in both animals."

Dr. E. R. Brush, of Mount Vernon, N. Y., a very bright and logical writer, goes on record as a believer in the idea that tuberculosis originated as a bovine disease. He says: "One simple fact that strengthens my belief that human bacillary tuberculosis is all derived from the bovine species is, that where this animal does not exist pulmonary consumption is unknown.

"The Kirghiz on the steppes of Russia, who have no cows, have domesticated the horse, using his meat, milk and skin, and a case of pulmonary tuberculosis has never been known to exist among the tribe.

"The Esquimau has no cows, neither has he pulmonary phthisis, and I think it can be laid down as a fact that where dairy cows are unknown, consumption is unknown. He further says that the reason that tuberculosis is not more frequently transmitted from cattle to man is accounted for in the difference in temperature. A germ cultivated in the cow is a tropical growth, because her average temperature is between 101 degrees and 103 degrees F. The hu-

man race, by this mode of illustration, represents the temperate zone.

"Coffee will not grow in Connecticut unless you put it in a hot-house. The bacillus introduced from the cow into the healthy man finds a difference of temperature of 4 degrees or 5 degrees, and although it may live and in a lessened degree increase, it does not become virulent until from some other cause the temperature of the man is increased, when it rapidly multiplies, and thereafter creates its own proper temperature, such as we find in most cases of tuberculosis."

Proportion of Infection.

Undoubtedly more deaths from tuberculosis occur among the human race than among animals, but there are far more dairy cows infected with tuberculosis in proportion to their number than in the human family. There is one very good reason why fewer deaths occur among dairy animals than among mankind, which is the high natural temperature. We know pretty conclusively that the tubercle bacillus requires for its growth multiplication and pathogenicity, a temperature above that of the normal body, and curiously enough, the raised temperature of the human subject that is pathognomonic of the growth of the tuberculous masses is the normal bovine temperature. Consequently, the tubercle will grow in the cow without any disturbance of her normal temperature, and the train of consequences that follows the effects of increased bodily heat does not occur in the cow from an invasion of tuberculosis. Therefore, the progress goes on in the animal, and unless other morbid conditions supervene to increase the bovine temperature the tubercle does not break down and cause sepsis, which is always the cause of death where the primary disease is tuberculosis.

Is not this a logical explanation for the apparent good health, good flesh and prime condition of so many of our cattle that have been subjected to the tuberculin test, condemned and when slaughtered are found to be to a greater or less extent diseased?

It has surprised people, dairymen as well as physicians and veterinarians, to find cattle apparently enjoying perfect health, in good flesh, in fact good beef, when slaughtered, in an advanced stage of tuberculosis.

The normal temperature of the cow seems to be the temperature at which the bacillus of tuberculosis flourishes best. It can and does multiply, flourish and increase in her body without making

her sick, because it does not increase her temperature, and she may go on in that way for years without apparent injury, until finally sepsis and death take place.

But the bacteriologist will tell you that the bacillus may and has been artificially multiplied and increased at a temperature even below that of the normal body, and that it has been found in the body of the carp, whose temperature was probably that of the water it inhabited. That signifies nothing, for it is no evidence that, even though it may live and possibly multiply at such temperature, it ever becomes pathogenic under such conditions.

For example, the presence of the Klebs-Loeffler bacillus in the throat of an individual signifies nothing but exposure. It requires its presence and successful development under favorable conditions to produce diphtheria. Further evidence of this theory was given in a lecture by Prof. Klebs in 1896. Although he did not seem to have this idea in view, he said: "That there exists a very high power of resistance against tuberculous processes in normal man and animals has been shown by myself and others, through the different intensity of different infections in various animals. I have also demonstrated that the greater number of tubercle bacilli injected into the blood are destroyed there; in rabbits not more than seventeen of a thousand bacilli injected into the blood vessels will find opportunity of forming tuberculous knots in the tissues.

"First Step in Tuberculosis.

"I regard nidulation (nest-building), which we call tubercle, as the first step in tuberculosis. Their nest may be developed in very small numbers and the tuberculosis can remain for a very long time in a very dormant or latent state, as in single tubercle of the brain, the bones or the lungs. The spreading of tubercle bacilli from their nests is undoubtedly a consequence of an alteration of the general health.

"The bacilli in such nests will not develop without some help from the body of the infected person. If the organisms which lay dormant many years in their nests begin all at once to increase in number and then propagate by detention in the blood or lymphatic vessels, there must be a diminution in the power of resistance, produced by other disease, like measles, influenza; etc." Here we have increase of temperature with lowered vitality as advocated by Dr. Brush.

The very important and practical question that arises in the mind of every one is not, does the disease called tuberculosis

exist among our cattle, for the affirmative has been demonstrated to the satisfaction of every intelligent person, but does its existence endanger human health and life? A negative answer is many times given by laymen, veterinarians and even physicians. A man may be a bright, intelligent farmer, lawyer, merchant or even physician, and yet be in no way competent to even have an opinion upon the subject, much less to try to influence an inquiring and interested friend, for the reason that they have never given an hour's study to the subject.

If I ever pretended to have a belief about a matter of the most expert inductive science, construction of dynamos, spectrum analysis, etc., and to publish that belief, when it utterly and absolutely contradicted the opinion of every expert in those sciences, I should hope I would be silenced for my egotism and impertinence. This is not a matter of what you believe or what I believe. Our experience and observations in this particular line may have been limited. But what is the recorded experience of competent men who have devoted months and years to the study of this particular subject and have demonstrated the truth of what they teach?

How to Prevent Tuberculosis.

The International Congress of Tuberculosis, which convened in Berlin, May 20, 1899, offered a prize of 4,000 marks for the best essay upon tuberculosis as a disease of the masses and how to combat it. As a result 81 essays were received, and July 31, 1900, through its committee, the International prize was awarded to Dr. S. A. Knopf, of New York.

In chapter 16 of the essay, under the heading of "What can the farmer and dairyman do to diminish the frequency of tuberculosis among animals, and thus indirectly stop the propagation of disease among men?" the doctor says: "Every one who has anything to do with cows should be acquainted with the nature of tuberculosis in cattle, also known as bovine tuberculosis. In animals, as well as in man, the direct cause of this disease is the tubercle bacillus. Bovine tuberculosis is prevalent in nearly every country. The symptoms of the disease are much like those in man. They begin with relatively slight functional disturbances. The way the germ of tuberculosis is transmitted from animals to men and also from men to animals has already been explained. The contagion, or rather propagation of the disease among animals, takes place in various ways: First, by drop infections; that is to say, little particles which are expelled during the seemingly dry cough. Sec-

ondly, by discharges from the lungs, or also from the glands of the throat, coughed up in the ordinary way. Thirdly, through tuberculous matter coming from the bowels. Fourthly, through secretions from sexual organs (vagina or uterus). Fifthly, through the milk if the udder is tuberculous, or if the whole body of the animal is invaded by the disease. Finally, the disease may be directly transmitted from the tuberculous cow to the calf.

"Fully one-half of the diseased animals examined have been ininfected by taking the bacilli into the body with the food.

"Fully nine-tenths of all diseased animals examined have been fected by inhaling the bacilli dried or suspended in the air.

"This implies that both food and air infections are recognizable in the same animal in many cases.

"Animals are infected, though rarely, during copulation. In such cases the disease starts in the uterus and its lymph glands, or in the sexual organs and corresponding lymph glands of the bull. Perhaps from 1 to 2 per cent. of all calves of advanced cases are born infected. Among the two hundred cases of tuberculosis, including all ages, which have been examined by the writer, there were about 2 per cent. in which the disease is best explained as having been directly transmitted from the mother during or before birth.

"We define the dangers of infection somewhat more definitely by the statement that in any herd, even in those extensively infected, only a small percentage of the diseased animals, namely, those which are in an advanced stage, or such as have the disease localized from the beginning in the udder, or uterus, or lungs, are actively shedding tubercle bacilli. It is these that are doing most, if not all, of the damage, by scattering broadcast the virus.

"Danger of Diseased Udders.

"Disease of the udder is particularly dangerous, because the milk at first appears normal for some weeks, and therefore would be used with impunity. Moreover, the bacilli in the diseased gland tissue are usually numerous.

"The foregoing statements apply to individual herds only. To what extent does the danger extend beyond the diseased herd to others in the neighborhood? To this we may give general answer that there is no danger unless the animals mingle on the pasture or in the stable. Tubercle bacilli are not carried in the open air, or if they are their numbers are so small that the danger of infection is practically absent. It is highly doubtful whether they are

ever carried in sufficient numbers by third parties from place to place to become a source of danger. The reasons for this must be sought for in the bacillus itself. The diseased animal is the only manufacturer of tubercle bacilli, as well as the chief disseminator. Tubercle bacilli, after leaving the body of the cow, do not increase in nature, but suffer a steady decrease and final extermination in four or six months at the longest. Only after they have entered the bodies of susceptible animals do they begin to multiply; hence, with this disease the only danger to other herds lies in the direct association, or in the transfer of a diseased animal or of milk from such animals. The great danger exists in the immediate surroundings of the infected and loses itself as the distance increases.

"Preventive Measures—Removal of Diseased Animals.

"This is the essential requirement in the suppression of tuberculosis. We have already stated that in only diseased animals the tubercle bacilli multiply. Hence, if these are removed and stables thoroughly disinfected, so that any germs shed by them are destroyed, we are safe in concluding that the disease is suppressed.

"The disease in the early stages can be detected only with the aid of tuberculin. In the advanced stages most careful observers will probably recognize it, or at least suspect it, without the use of the tuberculin. Tuberculin has, therefore, become indispensable in giving the owner an idea of the inroads the disease is making in his herd and distinguishing the infected from the non-infected. Tuberculin reveals to us all stages, from the earliest, most insignificant changes when the animal is outwardly well to the gravest and most dangerous types of the disease. Tuberculin does not, as a rule, discriminate between these cases. Hence, those who use it as a guide must not be disappointed when, after having killed the suspected ones, they find that many are in the earlier stages of the malady. Tuberculin, moreover, is not infallible. A small percentage of cases of diseases are not revealed by it. On the other hand a sound animal now and then gives the reaction of tuberculosis. These lapses must be borne in mind in using tuberculin. In spite of them, however, tuberculin must be considered as of great value in revealing tuberculosis not recognizable by any other means during life.

"Treatment of Infected Animals.

"The question next arises: What shall be done with the infected animals? This question is really composed of two distinct questions, whose combination is mainly the cause of the present

perplexity. From the standpoint of the farmer alone the matter is simple enough. The animals might be separated at once from the non-infected. Those without outward signs of disease might be fattened for the butcher and inspected. But at this point public health appears and demands the prompt and complete destruction of all infected animals, however mild the disease, or, if the animal be not destroyed, the rejection of the milk of all infected animals. The interest of the stock owner and of the public health are thus diametrically opposed.

"After all animals have been segregated or killed, as the case may be, and the stables disinfected, the remaining healthy animals should be retested with tuberculin within a certain period of time, from three to six months after the first test, to make sure that no disease has been overlooked.

"Future repetition must be recommended according to our present knowledge, for some cases may have been missed by the tuberculin or the disease germs may possibly be reintroduced by tuberculous human beings, or by tuberculous cats, dogs or other domesticated animals. All animals introduced into a herd must have been tested and found to be sound beforehand. This is such a self-evident proposition that it needs no comment.

"No Danger in Tuberculin Test.

"The tuberculin test should always be applied by a competent veterinarian and no danger will arise to the animals, for when properly applied the healthy animal is never affected thereby. Disinfection of all stables and surroundings that have been inhabited by tuberculous cattle should be thoroughly done. Cattle should be housed as little as possible.

"A royal commission appointed by the British Parliament reported in 1888 that their investigations proved the fact that tuberculosis infected milk is the principal source of infection in the seventy thousand deaths per annum in Great Britain from tuberculosis, and especially dangerous when derived from milch cows where udders are affected.

"The great danger of tuberculosis infected milk has been emphasized by Sir Richard Thorne in his lectures. Whereas the phthisis in adult life has steadily decreased pro rata with sanitary improvements, the number of deaths among young children from tabes mesenterica has increased as steadily, and that, too, proportionately with the amount of milk consumed, particularly infants' milk. It is calculated that 25 per cent. of the milch cows in Great Britain are tuberculous."

Dr. John D. Richard, of the Loomis Sanitarium, New York, in Sajou's "Cyclopedia of Medicine," published the present year, says: "Infection by tuberculous meat eaten in a partially raw condition has been frequently demonstrated, as well as the danger of infection by tainted milk. The latter is not an infrequent source of infection, and by many observers is accountable for the prevalence of intestinal and mesenteric tuberculosis in children."

Veterinary Recommendations.

The International Congress of Veterinary Medicine, at Paris, adopted the following resolutions:

1. "Bovine tuberculosis should everywhere be classed as a contagious disease and be under the supervision of the health authorities.

2. "Animals known to be tuberculous should be killed and their meat excluded from the markets.

3. "That the use of milk from tuberculous cows must be prohibited.

4. "All dairies should be subjected to a scrupulous inspection from time to time."

Dr. Harold C. Ernest, of Jamaica Plains, Mass., in a paper read before the Association of American Physicians, said "that there was no ground for the assertion that there must be a lesion of the udder before the milk could contain the infection of tuberculosis. That the milk from cows affected with the disease in any part of the body might contain the virus. That the bacilli of tuberculosis were present and active in the milk and in a very large proportion of cases, in cases affected with tuberculosis, but without any lesion of the udder."

The Scottish Metropolitan Medicine Society unanimously adopted the following resolution:

"That the society, thoroughly believing tuberculosis to be a systemic and contagious disease, urge upon the government to stop the sale of milk from animals suspected of being affected with tuberculosis, to suppress the consumption of meat from tuberculous animals, and to give compensation for a limited number of years."

Contamination of Milk.

The question of whether the udder is diseased or not, or even whether the particular cow from which the milk is drawn is tuberculous or not, in my opinion is one of little or no importance, if the

fact exists that tubercular animals are confined in the same stable, for in a large proportion of tubercular cattle the disease exists in the gastro-intestinal tract and the bacilli are thrown off in the dung, and more or less of this adheres to the animal when it lies down, and this by the careless milker is brushed off into the milk. The dung also becomes dried, the dust of the stable is loaded with the germs, and it is doubtful if a pail of milk ever leaves a stable where the disease exists without containing tubercle bacilli.

The sources of possible contamination which surround the milk after it is drawn from the cow are many and serious on the majority of dairy farms as they are conducted at the present time. Until all of the dangers of the dairy are recognized, many of the more grave, menacing ills cannot be remedied. It must be remembered, in considering milk, that there is no other article of food just like it. There is no food, fluid or solid, which presents so many favorable conditions for the absorption of the tangible material of disease and for its preservation and multiplication, and in no other instance is there a medium for the conveyance of infection by which so much harm can be accomplished in such a short time. Of course, a certain degree of heat will disinfect milk, but even a high temperature will not eliminate the toxins already contained therein.

Prof. H. W. Conn, in speaking upon the subject of dairy bacteriology, referred to the strange fact that milk, after passing through a centrifuge (the so-called clarification process), although it contains less gross impurities, shows more bacteria than before. This is explained by the fact that masses are broken up and large numbers of bacteria liberated. He further says that within five years fifty epidemics of typhoid fever have been traced to a contaminated milk supply.

"While the ideal milk supply does not by any means include sterilization or pasteurization, he thinks that these methods could not at present be wholly dispensed with.

Danger from Other Animals.

Around every dairy is a multitude of dangers, unfortunately, which are not always appreciated or avoided, and hence culminate in disaster.

There are many other animals about the dairy besides the cow which menace the dairy product. Often as seriously as a diseased cow herself, horses, dogs, cats, rats, mice and fowls undoubtedly are often the direct means of infecting milk and of passing con-

tagion along to the human race. Cats loll and purr around many dairies all day, and it is a very common thing to see a wheezy old cat lapping warm milk from a pail or other container.

These animals are known to succumb to a throat trouble which appears identical with human diphtheria, and it is also known that they die from many tuberculous forms of disease. So it is not unreasonable to ascribe contagion to these animals when they are allowed the freedom of the dairy.

Dogs prowl about the farm day and night and very often depend upon the carcasses of dead animals for their living. Cows, horses and pigs often die of septic and contagious diseases; the carcasses are hauled into the woods and fields, away from the house, and there left exposed as meat for farmer's dogs. These dogs come back and lap the milk from the pail, lick the empty vessels, which are never perfectly cleaned, and can there be doubt that the milk is thus infected? Where this danger exists in a dairy it is practically unlimited.

Rats and mice infest the ordinary dairy; they get into the milk and the milk vessels. These animals also have their diseases, and therefore the element of danger of diseases from these pests must be acknowledged. I could go on enumerating similar conditions until the close of this meeting, but there are other evils and dangers that we encounter besides bad milk that require some consideration, and in closing I will briefly allude to one of these, i. e., the slaughter house.

Danger of Slaughter Houses.

In many cases these houses are located on the banks of rivers or creeks, into which they drain. Frequently the offal is thrown down an embankment and left there to be eaten by hogs, dogs and rats, or to decay and drain into the streams. Quite often the slaughter house is located on farms, the butcher giving the offal to the farmer as feed for his hogs, in lieu of paying rent. In case a town is provided with more than one slaughter house, these houses are generally scattered north, south, east and west, each butcher apparently trying to locate his house so as to prevent an undue amount of curiosity on the part of his competitors regarding the character of his stock. Every slaughter house is, from the very nature of things, a centre of disease, and, naturally, the poorer the conditions of the premises the more dangerous they are. If only a few animals are here killed, some are sure to be diseased. At least one of the hogs has trichiniasis, and when the offal of this hog

is fed to other hogs which are raised on the grounds, these hogs cannot escape infection with trichinæ.

Slaughter houses are generally over-run with rats; they eat the offal, become infected, and transport the disease over an unlimited area.

Of the cattle killed during the year some of them surely have tuberculosis, and here let me say that during the past eighteen months I have ordered burned or buried eighteen beeves killed by our local butchers, that were so manifestly tuberculous that they did not dare to put them upon the market without consulting the health officer. Probably more than eighteen more went through unobserved, for when it is a matter of $25 or $50 at stake the butcher is not apt to use a magnifying glass—the entrails are fed to the hogs on the premises and there can be but one result, and that is to spread tuberculosis to the hogs on the premises.

Lessening of the Dangers.

Many of the dangers enumerated may be avoided by prudence and cleanliness. Many can be lessened by legislation and a rigid enforcement of the laws already enacted. The needed legislation is such as will require that the tuberculin test be applied to every bovine animal in the State, and the slaughter of every animal responding to the test; the immediate cremation, or where this is impracticable, the thorough burying of the carcasses. And unless the dairymen can be educated to see that it is not for their interest, to say nothing of the interests of the consumers of their products, to keep their cattle in unhygienic surroundings, such as small, dark, damp and unventilated stables, and the pernicious, cruel and inhuman practice of stabling cows in any kind of enclosed stables on hot summer nights, a law requiring the rigid inspection of dairies should be enacted.

But unfortunately many of the dangers will have to be endured, for we are a heterogeneous people, where God is for us all, each one is for himself, and the devil take the hindermost.

PROPHYLAXIS OF TUBERCULOSIS.*

By Dr. E. P. Lachapelle,

President of the Board of Health of the Province of Quebec, Montreal, Canada; Vice-President-elect of the American Congress of Tuberculosis.

Mr. President, Gentlemen:

In extending an invitation to address this meeting you have conferred upon me and the Province of Quebec, which I represent, an honor for which I am deeply indebted; allow me, therefore, to offer you my most sincere thanks. However, having to express myself in a language not my own, I feel it would be encroaching on your kindness and attention were I not to limit myself to the time allotted. Therefore, while speaking on the prophylaxis of tuberculosis, I will briefly state how the question appeals to me, and what are my views upon the best means to insure the efficacy of its application.

The large number of cases of tuberculosis, the fact of its frequent occurrence in infancy and childhood among children born of tuberculous parents, have led authors to classify this infection among hereditary diseases. Moreover, owing to the intimate nature of the disease remaining unknown for a long period, the notion of hereditary transmission had become almost one of absolute fatality. A child born of tuberculous parents was doomed beforehand. Any trace of tuberculosis found in an individual was the means of immediately regarding the parents, direct or collateral, as also contaminated.

The study of tuberculosis, guided by the light resulting from discoveries of Villemin, Pasteur and Koch, has brought out pathology from the narrow circle in which it had heretofore been moving. It is no longer a disease of the nutrition, a consumption of the tissues, an ulceration of the organs from lack of vitality, brought upon a living being by hereditary influence; it is a germ disease, consequently transmissible; common to man and beast, and usually communicated by direct contact. Both the medical and veterinary authorities agree upon this point, basing their

*Read at Medico-Legal Society and American Congress of Tuberculosis, May 15 and 16, 1901.—From Medico-Legal Journal, September, 1901.

opinion on incontestable proofs. As it happened with the soldiers of the Imperial Guard, observed by Villemin, one may become tuberculous, despite a most healthy constitution and the absence of any trace of tuberculosis in the family history.

The simple aspiration of the dust of tuberculous sputum, or the deglutition of tuberculous food, is sufficient to contaminate.

No doubt there are predisposing causes. Contagion from infectious diseases is not necessarily more fatal than pathological heredity. Tuberculosis does not derogate from the law of infections in general; together with the virulence of the germ, the natural predisposition of the tissues must not be overlooked; this is what constitutes tubercular heredity. A child born of tuberculous parents does not of necessity inherit the bacillus of Koch; this may be possible, but exceedingly rare; he becomes heir to a natural predisposition of tissues to tubercular invasion. Being a descendant from one or two organisms contaminated or weakened by Koch's bacillus, he grows with a modified nutrition, which makes him a fit prey and subject for tuberculosis. But the infection cannot break out without the presence of the pathogenic microbe, which, in most cases, comes from the exterior. He is contaminated in the same manner as those who are not born of tuberculous parents.

In tuberculosis, the constitution of the individual is an important factor; by hereditary predisposition, general debility, overwork, alcoholic intoxication, it facilitates tubercular invasion; it will also, to a great extent, influence the evolution of the disease, rendering it either more or less malignant with the possibility of recovery; or fatal from a progressive infectious course. For it is a well-known fact that tuberculosis can be cured, as well as that the natural predisposition of the individual can be modified. Is it not by the treatment of the constitution that the efforts of the therapeutists are crowned with the greatest success? Do they not try to stamp out tuberculosis by hygienic treatment; that is, open air, over-alimentation, rest, and, in a word, everything that can build up the general system?

From this scientific standpoint it would be easy to come to an understanding upon the best means to establish a rational prophylaxis of tuberculosis. To be efficacious, such a prophylaxis should embrace the two recognized etiological principles, namely:

1. To keep the organism from debilitation, or to modify it, if there already exists a predisposition to tuberculosis.

2. To prevent contagion.

As a means of maintaining or improving health, that is, to prevent or to eradicate the natural predisposition of the system to tuberculosis, we must resort to the following measures of paramount importance to the healthy child, to the predisposed one and to the adult:

1. To furnish the lungs of the child, always and everywhere, at home and at public and boarding schools, with a sufficient supply of fresh air; to give him but wholesome food of easy digestion and adapted to his age. To develop his physical strength by moderate exercise. To avoid muscular or nervous exhaustion and overwork.

2. If the child be predisposed to tuberculosis through heredity, scrofula and rachitis, greater care must be taken to apply the above measures and prescribe, if possible, a special hygiene, such as a sojourn in the country or near the sea.

3. In the case of adults, to oppose any special cause tending to diminish vitality and predisposing them and their descendants to the invasion of tuberculosis, such as alcoholism, overwork, bad nourishment, overcrowding and lack of ventilation. On this last point, to oversee, in a special manner, the hygiene of dwellings, boarding schools, factories, warehouses, theatres, prisons, etc., so that each inhabitant should have the necessary cubic space.

As a safeguard against the transmission of the germ of tuberculosis, the following measures should be advocated:

1. The notification of tuberculous cases. Bringing thus the centres of infection to the knowledge of the sanitary authorities will enable the latter to take the necessary steps for the protection of the community, due consideration being always given to the interests of the patient and his family.

2. The struggle against the spread of the disease from the desiccated sputum of consumptives, and for that purpose, the disinfection of their places of abode, the prohibition of dry sweeping and dusting, the prevention of spitting upon floors, pavements, and in public conveyances.

3. The struggle against the propagation of the germs of tuberculosis from infected food, and for this reason, the sterilization of milk, the inspection of meat, the regulation of dairies, abattoirs and butcher stalls.

4. The establishment of numerous popular sanatoria, where indigent tuberculous patients would be isolated, and learn to follow a treatment tending to their own possible cure, and also to eliminate the danger of contagion to others.

But, as all the above precautionary measures which the sanitary authorities of Europe and America have succeeded in establishing, only after lengthy observations, cannot become truly effective without the voluntary co-operation of the patients and the public, to establish the prophylaxis of tuberculosis on a firm basis, it must be, above all, regarded as a question of conviction. The best means toward this end is the education of the public. Enforce in all schools the teaching of the prevention against contagious diseases, of tuberculosis in particular, and within twenty years you will have formed a generation with strong convictions and ready to give its most hearty support to the humanitarian efforts of physicians and hygienists.

And meanwhile, as the present generation cannot be neglected, increase for the dissemination of knowledge, the number of associations, public lectures, pamphlets, etc.

Thus by the demonstration of facts and by persuasion will you gain the adherence of the masses, enact the necessary laws and regulations, and prepare the golden age of hygiene in America.

SOCIAL EVILS RESULTING FROM UNSANITARY DWELLINGS.*

By C. W. CHANCELLOR, M. D., of Baltimore, Md.

A careful consideration of the dwellings of the poor is an important question in social science and one upon which the public should look with their own eyes in order that they may see how little really has been done to improve the lot of the great mass of the human race. Modern ages have witnessed the growth of many sciences to maturity; of some to perfection. Every branch of physical knowledge has been explored with a success that has seldom failed to reward the toil of the inquirer, but it is plain that none of these is the science by which the misery that has marked the lot of the lower classes can be removed. It is equally plain that to the discovery of the means of removing such misery, the resources of the human mind should be intently applied.

Attention is being more and more directed to this subject, which involves not only the health, comfort and morality of the poorer classes, but in a measure the prosperity and happiness of all classes. The protection of the hygienic surroundings of the poor would,

*Paper read at the Annual Meeting of the American Social Science Association, Washington, D. C., April 17, 1901.

without doubt, protect the rich as well as the poor by lessening the distribution of the infectious material and thus "a common expense would be for the common good."

For many centuries there were but two classes among the Romans—the patricians and the plebeians. To prevent all cause of dissensions, a band of union was established between these two orders by a reciprocity of services, and corresponding obligations under the name of "patronage" and "clientship." By this arrangement the two parties were mutually bound to help and defend each other according to their relative condition and the nature and exigency of the case, and so sacred was this obligation that the patrons watched over the interests of the clients and the clients over those of their patrons as if they had been respectively parents and children.

There is, of course, no such thing as absolute perfection, but such a relation existing between the two great classes of human society is the surest safeguard against those influences which threaten to dry up the human sympathies and make the nation a seething caldron of unrest and unhappiness.

Production begins with the hands of the laborers, and without their labor there could be no capital. It is, moreover, sufficiently evident that without saving there could be no accumulation of wealth. That which is produced, but not immediately consumed, which is saved and set apart for another purpose, becomes an article of capital, and this saving is effected through capitalists. Whether they want it or not, capitalists are the trustees of those who labor, and execute their trust, some with more, some with less fidelity; but on the whole the duty is performed, and everything returns in the course of time, with only some trifling commission and discount deducted.

Whatever may be the general impression in regard to the liberality or illiberality of the wealthy class of society, it is undeniable that the hand of wealth is ever and anon stretched forth to relieve misfortune and distress. Such acts of generosity are to be distinguished from "ostentatious charity," which Dryden calls "the milkiness of blood." Acts of generosity and philanthropy rise above the ordinary rules of social conduct and flow in much too full a stream to be comprehended within the precise marks of formal precepts, and are quite sufficient to demonstrate that wealth does not harden the soul against the softer impulses of humanity. The noble examples of such philanthropists as George Peabody, W. W. Corcoran and Andrew Carnegie will require only to be

known to find benevolent and enlightened imitators, and thus form a bond of union between capital and labor as sacred as that which existed between the patricians and plebeians of ancient Rome.

In many of our large cities there are dwellings so badly situated, in such ill-repair, and altogether so miserable that those who occupy them are exposed to disease and every other inconvenience and discomfort. Such houses are usually tenanted by a class of people who are destitute of the necessary means to better their condition, or, being "steeped to the very lips in poverty," are indifferent to cleanliness and all other comforts. Mark Twain once said that he had been up a mountain so high that he could not tell the truth on the top of it, and we may readily imagine that people dwelling in the midst of such degrading influences can fall so low in the scale of Christian civilization as to lose every sense of moral obligation.

Practical hygienists give 1,000 cubic feet as the standard amount of air space for each individual occupying a room, and 700 cubic feet as the minimum space in which a person can live and not be injured by the poisons exhaled from his own body. It is well known that in many houses occupied by the poor the quantity of air supplied to each inmate is sometimes reduced as low as 100 cubic feet, and under such conditions the atmosphere in the room becomes as obnoxious to human lungs as the water of a stagnant pool is to the gills of a mountain trout. The man or woman who constantly dwells in an atmosphere of filth loses the power of benevolent sympathy, and, as a consequence, the poorest individuals in civilized society are generally the most reckless and intemperate, from a sense of their own misery, superinducing a condition—a disease, it may be called—which craves for stimulants.

Statistics recently published in Paris show clearly that good surroundings afford comparative immunity from pulmonary tuberculosis. From this report it appears that the average number of deaths per 1,000 inhabitants from this disease in the poorest quarters of the city is 6.9; in the quarters occupied by the laboring classes, 5.4; in the well-to-do quarters, 3.5, and in the wealthiest districts, as the Champs Elysees, only 1.4, or 5½ per cent. less than in the poorest quarters. It is calculated that in England one-fifth of all the deaths occurring are from pulmonary consumption; in France one-sixth, in Germany and Austria one-seventh, and in the United States about one-eighth. Of all the deaths occurring in the world it is estimated that about one-seventh are from consumption. If, then, one-seventh of all who die are carried to their

graves by consumption, the causes which lead to this fearful mortality demand more than ordinary consideration. Among the causes, one of the most fruitful is the unsanitary dwellings of the poor.

But it is upon infant life that these dens of atmospheric pollution exert their most baneful influence. Here the blood of "the innocents" is poisoned from birth by the noxious influences of bad air and adulterated food; consequently their nutrition is defective, and the majority of them are found frail, puny and miserable.

With regard to the direct and immediate means of dealing with the evils of such dwellings, Mr. Joseph Chamberlain, of England, has gone to the root of the evil and spoken out with uncompromising plainness. He would have the authorities proceed on the assumption that houses unfit for habitation are public nuisances and that the community in such cases should justly compel the owner to put them in proper condition or require them to be closed or demolished. Here, too, the social reformer should boldly lay his hands upon the evils of these unsanitary dwellings, bubbling over not only with crime and immorality, but pestilent with disease, which sooner or later will engulf all of humankind that dwell within their poisoned precincts.

IMPROVEMENT IN WELSBACH GASLIGHTS.

The Welsbach light really became a commercial lighting factor for the first time when Dr. Carl Auer von Welsbach some ten years ago brought out what is called the thoria-ceria mantle, which is composed of about 99 per cent. of thorium oxide and 1 per cent. of cerium oxide. This mixture, in which the thoria is the light-emitting member and ceria the exciter, as it is called, greatly exceeds in light-giving efficiency any of the other mixtures of zirconia, yttria, lanthana, magnesia, etc., which form the basis of mantles made under the earlier Welsbach patents. Naturally, in the invention of an illuminant, the first importance must be given to getting the light; but once this was secured, the inventors and manufacturers began to turn their attention to improving certain features of the mantle, which are not of the same highly satisfactory quality as the light emission.

The features which have been particularly the subject of almost endless experiment are the mechanical strengthening of the almost hopelessly weak ash-like structure itself, the prevention of the

rapid diminution of the intensity of the light due to the sublimation of the ceria, and the deformation of the mantles due to shrinkage, which fault is to be laid to the thoria itself.

Of course, the chemists busied themselves with the problem of the purification of the constituent materials, and all sorts of attempts were made to better the original ghastly greenish color of the light. Successful chemical purification removed almost entirely the objectionable color and cleared the field for investigation along the other lines; but, despite the legions of patents in all countries and the extravagant claims of inventors, the thoria-ceria mantle, with all its good and bad qualities, holds the market today. Inventors succeeded in exorcising certain of the evil spirits, but usually with the introduction of other and equally sinister demons of their own conjuring.

The manufacturers, on their part, greatly improved the methods of treatment, packing, and shipping of their products, and burners of cheaper and better construction gradually appeared in the market, with the result that the incandescent gas-burner in all its features became standardized and accepted to such a degree that only a new and radically improved method, which should eliminate one or more of the recognized defects of existing mantles, could command any substantial success.

Such a departure has now been made by Mr. Rudolph Langhans, an Austrian engineer resident at Berlin, who has discovered and perfected a chemical complex, which, when added to the thoria-ceria mantle, converts it from a loose, weak ash structure, scarcely able to sustain its own weight, into an elastic glass, wherein the constituents are chemically combined and not merely mechanically piled together. This chemical binding makes the mantle not only stronger, but it holds the ceria to its work and thereby maintains the constancy of the light emission; and by one of those freaks of fortune that sometimes favor the inventor, it paralyzes the shrinkage tendency of the thoria. So with one stroke, the mantle becomes many times as strong, not to the extent of resembling a wire gauze, but strong enough to withstand use on railway trains; it keeps its candle-power so that after four months of normal usage, it is brighter than an ordinary thoria-ceria mantle after a few hours' burning. The shrinkage interests the consumer only indirectly, its effect being to bring the mantle out of the hottest part of the flame and thus help to reduce its candle-power.

The chemical complex which effects this transformation is the silico-zirconate of an alkali—for example, soda—which enters the

mantle and unites to form a complex double compound having the nature of a glass, the thorium replacing a portion of the alkali and the cerium also entering the compound, so that the result, chemically expressed, is a seriated silico zirconate of thoria and soda.

However, the compound, as stated, is not necessarily good, but becomes so when the molecular relations of the elements are so adjusted that for each molecule of silicon one molecule of zirconium is present; in other words, the molecular relation of the two acid compounds, silicon and zirconium, must be closely 1 to 1. This complex is not made separately and added to the complete mantle by dipping the latter in a solution of the former, or any such way; it is formed in the mantle when the latter is made, being added to the thorium-cerium impregnating solution.

A curious phase of this advance is that both silica and zirconia have been used before in mantles, but to no useful purpose, as the former will not unite with the thoria of the mantle unless the alkali is present, and, when used alone by itself without zirconia, gives mantles that almost invariably split open from top to bottom either in manufacture or use. Zirconia by itself serves no useful purpose, its presence being only corrective of the faulty action of the silica and only properly corrective when the molecular relation 1 to 1 is maintained—too much zirconia causing shrinkage, too much silica splitting.

When once the constituent materials of the mantle are chemically united, further slight improvement can be effected by introducing other elements into the complex—for example, the brittleness in extreme cold weather may be reduced by adding a properly adjusted amount of beryllia and the color and light improved by a slight addition of cobalt. In fact, the door is opened to the correction of minor defects now for the first time given consideration.

The life of these mantles in service is from one thousand eight hundred to two thousand hours. The candle-power at the end of six hundred hours, under conditions of quality and pressure of gas such as are found at Berlin, is as high or higher than the candle-power of a thoria-ceria mantle burning under the same conditions for fifty hours.

As regards shrinkage, this factor is practically eliminated from the new mantle, whereas the thoria-ceria mantles shrink and form what is technically called a "waist" just above the burner after a few hours' duration. Another of the peculiar properties of the new mantle is that during the first ten or twenty hours of use it actually increases in candle-power, whereas the maximum lumi-

nosity of the thoria-ceria mantle is at the moment when it is first lighted.

By reason of their increased mechanical strength, the new burners will be applicable under conditions where hitherto no mantle gaslights have been used—for example, in railway cars and other positions where strong vibration is unavoidable—also all forms of lighting in which gas is burned under excessive pressure and systems in which extra large mantles are used. This new departure will be of the greatest value, as its increased mechanical strength will materially prolong the life of these mantles, which at present is excessively short and constitutes the main objection to their use. In the manufacturing stage as well, the great strength of the new mantle reduces by 10 per cent. or more the loss resulting from breakage. The cost of manufacturing is not increased, as the slight extra expense necessary to carefully adjust the proportions of the mixture is more than compensated by the decreased weight of the mantle itself. Experiments are at present in progress to determine the exact life and characteristics of the new mantles as applied to the comparatively rich American gases, and, so far as they have been conducted, they do not show any marked difference, and there is no reason to suppose the mantle will not be as applicable to American conditions as to those of Germany.

FRANK H. MASON,
Consul-General.

Berlin, March 22, 1901.

THE PRODUCTION OF AN ARTIFICIAL LIGHT OF THE SAME CHARACTER AS DAYLIGHT.

In a paper read by Messrs. Arthur Dufton, M. A., and Walter M. Gardner, before Section A, at the Bradford meeting of the British Association, last year, the authors said:

It is a matter of common experience that many colors alter in appearance when seen by artificial light. The extent to which colors may vary under different illumination is perhaps not commonly known, but is well illustrated by the range of dyed cloths exhibited. Among other patterns, one which is green by daylight becomes red-brown by gaslight; a violet changes to purple; a gray to heliotrope; a shade of tan to a brick-red. Particularly striking is a pattern woven from specially dyed yarns, which appear a uniform green color by daylight, but which is figured by gaslight. Seen by the light of the electric arc, the patterns show similar but less marked changes.

It may be of interest to indicate briefly how such peculiar changes of color arise. The color of a body depends, in the first place, on the nature of the incident light. In monochromatic red light a red appears much the same as in daylight, but a yellow changes to red, a green is almost black, while blues and violets become red.

Gaslight shows a continuous spectrum from red to violet, but compared to daylight is of a strong orange color due to an excess of rays in the red, orange and yellow. It does not, however, necessarily result that all colors appear redder by gaslight. It is, indeed, well known that the majority of colors change little by gaslight. This is due to the adaptability of the eye; if the light becomes redder the eye becomes less sensitive to red; if the light is deficient in green the eyes become more sensitive to green. Persons working by gaslight soon cease to notice its intense orange color. It results that a gray produced by mixture of black and white appears gray under any illumination, and simple colors, such as reds, oranges and some greens giving light confined practically to one part of the spectrum, undergo little change.

Generally, however, the color of a body is due to a mixture of light from different parts of the spectrum. All violet colors are transparent, not only for violet but also for blue and red light; all blues transmit not only blue, violet, and green light, but also more or less red. Consequently, whenever a blue or violet is used in the production of what is called by artists a "tertiary" color, the general result is a color having bright bands in different parts of the spectrum. A mixture of red, blue and yellow to produce a neutral gray will show bright bands in the red and green—complementary colors, resulting in a proportion of white light. According to the exact position and intensity of these bands the gray will become redder or greener or may even remain unchanged by gaslight.

Generally colors become redder under artificial light. This is due not merely to the redder character of artificial lights as compared with daylight, but to the peculiar transparency of coloring matters for red light. Among reds and yellows, we have many theoretically perfect coloring matters—a perfect yellow being one having sharp absorption in the violet and blue, and perfect transparency for green, yellow, orange and red rays. A perfect blue would be transparent for violet, blue and green, and opaque for the rest of the spectrum. Apparently such a blue can only be obtained by means of cupric salts. All other blue dyes and pigments we have examined agree in being more or less transparent for red light.

Even greens transmit some red. This peculiar transparency of colors for red light is of primary importance in color matching. All dyers know how persistent is the tendency to the development of the red in the production of compound shades.

The need of an artificial light which should so closely resemble daylight as to show colors in their true relationship has long been felt by workers in color. At present the electric arc light is largely used for color work, but, as we have seen, it is far from satisfactory.

The peculiar character of daylight is due essentially to the modification produced by the atmosphere in the light from the sun. Light from a north sky as usually adopted for color work is deficient in red, orange and yellow rays, and consequently the light from a clear north sky is intensely blue.

Starting with the electric arc light as being nearest daylight in character, the authors attempted to imitate by direct absorption the effect produced by scattering in the atmosphere.

The light of an arc light consists of two distinct parts: (1) The light from the glowing carbons; (2) the light of the arc itself, characterized by its richness in violet rays. In lamps of the enclosed arc type the length of the arc is increased, and consequently such lamps give a light richer in violet rays. Although arc lights vary somewhat in the proportion of violet light, they all agree in being richer than daylight in the amount of red, orange, and yellow rays, compared with the amount of green and blue. Owing to the peculiar transparency of colors to red light already noticed, it is of primary importance that the proportion of red light should be carefully adjusted. Small variations in the amount of violet light are of minor importance, owing to the eye being less sensitive to such rays, and also because in mixing colors there is not the same tendency to develop a band of violet as we have seen occurs in the red, since yellow colors generally have complete absorption in the violet.

The required absorption of the less refrangible rays can be effected by means of the cupric salts. A solution of copper sulphate shows strong absorption at the extreme red of the spectrum, the absorption extending with diminishing intensity into the green.

For practical purposes the light from the arc is modified by passage through pale blue glass colored by means of copper. This colored glass may conveniently take the form of a globe replacing the ordinary globe of the arc light.—"American Gaslight Journal."

MEDICAL EXCERPT.

By T. P. CORBALLY, A. M., M. D.

FRACTURES OF THE SKULL.—M. Poirier has presented a communication to the Société de Chirurgie ("Le Progrès Medical," Janvier 26, 1901) on a fracture, probably of the anterior part of the base of the skull, complicated with meningo-encephalitis, which was cured by trephining. The patient fell, striking the right side of his head. He was ascending the steps of a stairs, slipped and fell senseless. He had hæmorrhage from the nose; three days afterward, ecchymosis of the conjunctiva; five days after the traumatism he went to his work, but the same day he was taken with pain in the head, then became delirious, and was again brought to the hospital. The temperature was then 30.8 Cent., about 87.5 Fahr.; the pulse was 60. M. Poirier, on the following day, decided to operate for his relief. The operation was bi-lateral trephining below the ears, removing a piece of bone 4 to 5 centimeters in length and in breadth. The incision of the dura mater gave issue to a quantity of liquid, some of which had been obtained by lumbar puncture. Two drains were placed, one on each side. The fourth day the temperature fell to 30.7, and on the tenth day the drains were withdrawn. The patient was really cured. The liquid that was withdrawn was subjected to culture, and gave in both cases staphylococci.

This case is very interesting on account of the result obtained.

Some years ago a young lady of Brooklyn suffered excruciating pain in the forehead just over the frontal sinus. The patient could not sleep; slight movement of the face or mouth intensified the pain; she became weak and pallid; her friends did not expect her recovery. Two young friends, a sister and a cousin, were trying to divert her one evening. The young man threw an apple with some force at the patient's sister, who sat near her. He missed the object aimed at and struck the patient on the forehead directly over the seat of the pain. The patient fainted and fell senseless to the floor. The family, terrified, did not know what to do; but in a few minutes blood and pus in abundance streamed from the nose, and gradually the patient regained consciousness. She recovered slowly but satisfactorily, is still alive, a healthy matron, grateful for the accident that alarmed her family, yet no doubt saved her life.

M. Tuffier has made many punctures in the lumbar region to establish the correctness of the diagnosis of fracture of the skull when its existence was doubtful. The cerebro-rachidian liquid is almost always discolored with blood in cases of fracture of the base of the skull, and the greater or less discoloration of the liquid is in proportion to the gravity of the lesion.

These punctures may also have some value in a therapeutic point of view, as enabling a differential diagnosis in other diseases.

HEART FAILURES.—M. Kelsch has often observed cases of sudden death due to latent diseases of the heart. These vascular lesions are the consequence of special causes, as gastric fevers, diphtheria, grippe and the like. The lesions of the tissues become aggravated under the influence of fatigue, or excessive exercise, and then dyspnœa arises as a premonitory symptom, but in certain cases the tissues become altered, unperceived by the patient, and rupture of the aorta or of the heart takes place violently and produces sudden death.

TUBERCULAR RHEUMATISM.—M. le Prof. Poncet, of Lyons, has presented to the Academy of Medicine ("Gazette Hebdomadaire," July 28, 1901) a new form of rheumatism, having its origin in biliary disturbance, which he calls tubercular rheumatism.

It was very generally admitted that there was incompatibility between tuberculosis and rheumatism.

This kind of rheumatism may be placed beside infectious rheumatism and the blennorrhagic, puerperal and scarlatinal forms. M. Poncet supplies in support of his distinction these observations (cases) in the course of which very many manifestations have been noted in the articulations, beginning with pain, fluxions of the joints, and ending, in certain cases, in arthritic fungus with innoculable bacillary conditions.

DEATH FROM RACHICOCAINISATION.—M. Broca relates a case of Dr. Prouff ("Le Progrès Medical," July 20, 1901), in which he made an incision into the foot to locate a foreign body because the woman was suffering with dry arthritis of the hip and knee. M. Prouff used rachicocainisation to enable him to make the exploration; he injected 1 c.c. of 1 per cent. solution, according to the authorized method; the analgesia was complete, and after the dressing of the foot the patient was able to walk without difficulty, and an hour after the injection she was able to attend to her ordin-

ary duties. But about four hours later she was attacked with an intensely painful rachialgia, and Dr. Prouff was summoned immediately; he found her deathly pale, with dreadful pains and a pulse that could not be counted. The next day she was dead.

M. Nelaton has recently observed some very severe cardio-pulmonary cases of great severity, and the analysis of the cocaine used showed that it had undergone changes which might possibly have been the cause.

M. Rochard confirmed the opinion of M. Nelaton. The cocaine is often changed in quality; among other things is found a product of decomposition, ecgonine, which possesses properties analogous to atropine.

THE ANODYNE TREATMENT OF ACUTE PERITONITIS.—McCaffrey (The Etiology, Pathology and Treatment of Acute Peritonitis, "Medical News") observes that the most pronounced indication for treatment in peritonitis is that for the relief of pain. Blisters and counter-irritation, the older resorts, are practically useless. Hot water bags and poultices are far superior, but the relief they afford is only temporary. In some cases the ice bag is more grateful than hot applications. But whether hot or cold is employed, it should be relied upon only until other lines of treatment can be instituted. Papine should be given in teaspoonful doses every hour, and the doses repeated frequently enough to afford the desired results. Relief from pain, short of narcosis, should be sought, and this is generally easily obtained by proper dosage. Papine does not produce nausea, but rather prevents this symptom. In the event of the development of more or less prostration, a proper stimulant, such as strychnine or nitro-glycerine, should be judiciously employed.

QUINIC ACID AND GOUT.—Dr. de la Camp, assistant at the Medical Clinic of Berlin University, invites attention ("Münchener Medicinische Wochenschrift," July 23d, 1901) to the result of Weiss' experiments, that quinic acid lessened the excretion of uric acid and increased that of hippuric acid in the human subject; and he recommended it as a therapeutic and prophylactic remedy in the uric acid diathesis, and more especially in gout. Combinations of quinic acid with other remedies for gout, such as citrate of lithium, piperazin, etc., have been recommended by various observers; and Nicolaier has recently experimented with one with Urotropin, called Chinotropin.

De la Camp has employed Chinotropin for his experiments. Two preparations were experimented with: a Chinotropin II., composed of two molecules of quinic acid and one molecule of Urotropin, and Chinotropin III., containing four molecules of quinic acid and one of Urotropin.

He concludes that quinic acid, even in large doses, is harmless. He advocates the employment of the quinate of Urotropin (Chinotropin) because the Urotropin itself is decomposed in the human body, and gives formaldehyde, which forms readily soluble combinations with the uric acid. And in urinary concretions more especially, Chinotropin is deserving of further experimentation.

A NEW COUGH SEDATIVE.—"Antikamnia and Heroin Tablets," each tablet containing 1-12 grain Heroin Hydrochloride (muriate) and 5 grains Antikamnia, is particularly recommended by Dr. Uriel S. Boone, Professor of Pharmacology and Surgery, College of Physicians and Surgeons, St. Louis, as an efficient cough sedative, alike useful in acute bronchial cough and in tuberculosis.

DIRECT INFECTION of a nurse from a consumptive patient is reported by Stewart ("American Journal of the Medical Sciences," September, 1901), in the description of a case of acute splenic miliary tuberculosis. The patient was a young woman who had no evidence of tubercular infection prior to her attendance upon a phthisical patient. The patient was in poor circumstances and had apartments which were badly heated and damp, and the nurse's nourishment while attending him was of very poor quality. In the middle of her second week of attendance upon the case she became acutely ill, and died 68 days later, the autopsy revealing a universal tubercular infection.

KOCH'S MODIFIED STATEMENT.

In answer to criticisms of his address at the Tuberculosis Congress in London for his omission to recognize the priority of the discovery of the non-identity of the human and bovine tubercle bacillus, by Theobald Smith, he now says that he laid no claim either to priority or monopoly to any ideas propounded in the address, but "I sought only to tell of my own private experiments, and was, in fact, glad of the opportunity given to mention my contemporaries in some of their experiments, among whom was one

of America's greatest medical authorities, Dr. Theobald Smith." Regarding the danger of infection from tuberculous cattle, he said, in the address: "I should estimate the extent of infection by the milk and flesh of tuberculous cattle and the butter made of their milk as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures against it." As modifying this uncompromising statement, he now says: "I did not mean to recommend the abandonment of comprehensive and expensive systems of regulation, prevention and inspection that are now in operation. I simply said that it was injurious and unnecessary to go further with such systems when we were justified in expecting that our long-sought remedy was found and almost within our reach. Why, then, should we rear higher structures which must inevitably fall to the ground?" He very justly adds that experiment and not argument must now be the watchword of medical and scientific men who would conquer tuberculosis.

SUBSTITUTION IN MEDICINES.

In a recent case of death from poisoning ("Medical Record." August 24, 1901), the druggist who gave the wrong medicine offered as an excuse that he had merely substituted one article for another on the supposition that it was of equal strength and much cheaper. The prescriber, in testifying on the trial, stated that the practice was a very dangerous and very frequent one, and was apparently past remedy. While the latter may, or may not, be the case, it is quite certain that with many who claim to be reputable and competent pharmacists the practice of substitution is very common.

From the business point of view it is a fraud on the producer, and, from the ethical view, a danger to the consumer. Both parties in the compact have thus a common cause against the middleman who surreptitiously plays the part of thimble-rigger and steerer.

The temptation to substitution is always strongest with the most expensive medicaments, and in the case of such as have a known quality of efficacy. An inferior and oftentimes inert article is almost invariably used when substitution is practised. Thus the manufacturer and the prescriber are always placed in a false light with the patient, who expects certain promised results.

Generally speaking the physician is the one to suffer the most, as his disappointed client is apt to leave him for another. How many lost patients can be accounted for in this way it would be difficult to imagine. The too trustful physician is in a very bad way between the prescribing druggist on the one hand and the ever-ready substituter on the other. Must he be compelled to turn dispenser himself in sheer defence? Certainly, in some cases, the crime has, in this way, met its penalty. But when we look about for a remedy against the evil, we butt against the bulwark of general depravity and the impossibility of applying ordinary missionary efforts. The only thing is to discover and then to punish. The man who substitutes once will do so again. He has no conscience to begin with, and nothing, in fact, to which an appeal can be made. The whole question, then, narrows itself down to that of mutual trust and the dispensing of original unbroken packages.

COLLECTIVE INVESTIGATION OF THE INFLUENCE OF THE SILVER NITRATE INJECTIONS ON PHTHISIS.

To the Members of the Medical Profession:

In 1892 the undersigned began a collective investigation of the action of cold in the treatment of acute pneumonia, and there is reason for believing that this procedure, which resulted in gathering four hundred cases of this disease thus treated, with a death rate of not quite five per cent., was an important factor in calling attention to the utility of that treatment and in introducing it to the profession of this country. That research was based on the conviction that no remedy can be called truly successful until it has passed the exacting crucible of clinical experience, and it is now proposed to apply the same ordeal to the silver-injection treatment of phthisis, which, in a large hospital, dispensary and private practice, reaching over a period of three years, and during which many thousand injections were administered, has given me greater satisfaction than any other method that I have ever employed. In keeping with the above expressed feeling, a cordial invitation is herewith extended to those members of the profession who have the inclination and opportunity to investigate this method of treating phthisis, and to whom a reprint on the subject, with full information and blanks to report cases, will be cheerfully sent on application.

Thomas J. Mays, M. D.

1829 Spruce Street, Philadelphia, Pa., Aug. 15, 1901.

EDITOR'S TABLE.

SANITARIAN, OCTOBER, 1901.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton St., Brooklyn, N. Y.

GODLINESS AND UNCLEANLINESS, AND DISEASE.

The apothegm that "Cleanliness is next to Godliness," approvingly quoted by John Wesley and frequently by other religious people since his day, is misleading in so far as it is understood to imply a Christian origin.

By whom the phrase was originally composed is unknown, but the spirit of it was understood and practised by some ancient nations centuries before the Christian Era. Among the Egyptians in particular, Plutarch tells us, health was no less respected than devotion. A similar sentiment is expressed in the Talmud, where it is said the Rabbis cultivated health many centuries ago as a religious principle and sanitary law wisely observed by Moses. Hence, as regards even an approximate date when health was first discovered to depend upon cleanliness, there are so few facts upon which one might venture to base a statement, it seems probable that the time antedates written history.

In Hebrew and Greek history, Egypt always appears as the relatively advanced centre of civilization from which the Hebrews and Greeks, as other nations, derived light. Moses, for instance, is described as learned in all the wisdom of the Egyptians. And of medicine in particular, the basis of sanitary knowledge, Homer says the Egyptian doctors "were truly of the stock of Pæëon, and each of them knowing more than all other men together." Herodotus also, in his account of the specialism of medical practice in Egypt, justifies the inference that the rudiments of hygiene, at least, were practised there from time immemorial.

Roman cleanliness as an obligatory civic measure was definitely instituted by the establishment of the Ædiles, 494 B. C., and was maintained for about eight centuries. It was doubtless preceded by, or pursued conjointly with, domestic hygiene, as shown among the discovered remains in the ruins of Pompeii.

The Roman system comprehended the division of the city into four police districts, with special provision and officers for the

construction and superintendence of public works: sewers, aqueducts, public baths, gymnasia (thermæ), latrines, removal of city refuse, prevention of nuisances, and cleaning of streets, with sundry details, but all with reference to health and pleasure only; coupled with a monstrous sensuality, so shocking to the early Christians as to render all the paraphernalia for cleanliness despicable luxuries to them; insomuch that they repudiated their use as sinful and pursued the opposite extreme—instituted the cult of uncleanliness and gloried in it.

The early Christians despised their bodies and tortured them for encumbering their souls; cultivated the most loathsome uncleanness of both their persons and surroundings as a Christian virtue, and called it holiness!

This cult of uncleanliness, following the fall of Rome, reigned throughout Europe for more than a thousand years. It created and propagated the great epidemics that prevailed during the period and attributed them to God, as an exercise of His vengeance upon the people for their sins.

Nevertheless, even now, as then and all along ever since, despite common knowledge of the human organism which may be acquired from school books, disease is and has been continuously preached and inculcated in books of devotion, as a special entity or active principle visited by God upon sinners as a penalty for their transgression—a belief which, logically considered, would imply the continuance of devout lives indefinitely, and that man, as originally constituted, was intended to occupy this world forever.

Every organized being, and every organ and tissue of every such being, has been long since known to be composed of and sustained by living cells, each one of which is possessed of an independent life of its own, has a period of development, maturity and decay, and dies; yet always subject to an uncertain period of vitality depending upon conditions. The life of the organized human body exists as the sum of these vital units, and is, as a whole, like them —has a period of development and growth; a period of middle life in which the functions strive to maintain an unaltered mass coincident with the constant decay and elimination of worn-out and disintegrated particles; and an epoch of decreasing energy, which is concluded by death. But all along, from infancy to old age, at every stage, man's life is like the units of his organism, more or less uncertain.

As the world was not made for man alone, his health and life depend upon external conditions and the relation of things around

him, living and dead, in the midst of which he is placed, and his manner of life. Latitude, elevation, nature of the soil, degree of cultivation, relative position in regard to mountains, forests, rivers, etc., and general aspect of the neighborhood, all modify the habits and powers of man, while they show his cosmopolitan adaptability by such effects as serve to make him understand his relation to circumstances. What he ought to do for himself is indicated by the knowledge of his organization and powers in relation therewith. With the faculty of reason for his guide in the prosecution of his purpose, man continually risks the consequences of his free agency by fortifying himself against recognized dangers to his health and life, or by boldly setting them at defiance by the irregularities of his conduct. In both alike disease is a providential sentinel on his way.

The uncertainty of the issue in any disease, however slight in the beginning, is evidence of its merciful object. Were it otherwise, were our bodies so constituted as never to be sick but unto death, appalling and hopeless indeed would be the condition of man suddenly overtaken in a sinful life, without opportunity for repentance. But the uncertainty of disease, both in occurrence and duration, and the occasional recovery from even the most generally fatal diseases, indicates, guards and secures its beneficent purpose.

The beginning and end of human life are only steps in an eternal existence. Death is the completion of life, but if disease had no other purpose nor end than death, it would be an anomaly in the works of the Creator, involving an arrangement of vitality without salutary tendencies. Like our own handiwork, which has no provision in itself for repair, we should wear out; labor and sorrow would be the end of all our days; life would be a burden, health beyond hope, and eternity a new creation. Indeed, it is only by the present arrangement of disease that its Divine origin and purpose can be appreciated and its beneficence discerned. Disease is never manifest as a mere punishment, but is always an admonition or correction in mercy. Even when it is brought about by our own misconduct, it is consonant with this view, because we are admonished by it to be ready for death. From infancy to old age the innocent and the guilty are alike subject to disease and to its uncertainties; and no manner of life can be alleged in justification of its infliction as a penalty for transgression.

Man is in such constant danger of the too exclusive exercise of his free agency and powers for the affairs of this world, as to be in

constant need of a monitor to check his liability to perversion; and there is no condition in which he is in more danger of forgetting that an eternity awaits him than when he is in the enjoyment of health. The occurrence of disease and interruption of his pursuits in such circumstances may be disregarded, unheeded, but its purpose is not on this account altered. The visitations of leprosy on Azariah for profanity, and Gehazi for covetousness and falsehood, do not conflict with this conclusion—they were corrections in mercy, as were also the inflictions on the Israelites.

By disease we are reminded of neglected conditions or errors committed *for our own improvement,* not punished that others may profit by our example, which is the design of punishment. Moreover, as a general thing there is no connection between acts performed and disease. Indeed, if this were the case, we should find that the righteous and the wicked could be designated by their relative degree of health, and we should be constantly led to inquire, "Who did sin, this man or his parents?"

The worldly benefit of disease is to be obtained by endeavoring to discover its nature, how it might have been avoided and how its recurrence may be prevented as long as possible, consistent with the human organism; and, finally, by a meek submission to its purpose in relation to life everlasting.

It is thus that the Creator, having designed man for a higher sphere, has not only given him the capacity of knowledge and virtue, but has set disease as a sentinel on the threshold of his future existence.

OUR BASHFUL HEALTH BOARD.

Nobody expects our Board of Health to act without very strong incentives, says the Brooklyn "Eagle," and there appears to be no citizen with an incentive. But if we had an old-fashioned, non-political Health Department it would be of interest to know how it would deal with the factory in Brooklyn that makes

Coffee Out of Sweepings and Grain Screenings.

This concern roasts these substances, together with weevils and the proofs of visits of rats and mice, and sells them at about three cents a pound. It announces that it will do the mixture to any shade of brown that the buyer pleases, so that they shall represent coffee lightly roasted or deeply burned. What is not used as coffee becomes pepper, and this pepper is said to contain a good many weed seeds. As poppies grow among various of our grains it is not improbable that poppy seed is mixed with the pepper and

the coffee, and with what effect on the human economy the opiate decoction is drunk it would be well to know.

Last year when the bogus coffee manufacturers were threatened with exposure, they defended themselves by saying that they did not sell their product as coffee. They offered it to the grocers for simply what it was; dried and ground scrapings and leavings, plentifully mingled with dead insects and manure, and the grocers were to blame for packing this stuff and selling it to their customers as coffee. Nevertheless, it is made for the express purpose of deceiving, and none of it is sold to any person for any other reason than to enable him to cheat innocent buyers, who imagine that coffee which is offered at a few cents a pound is the real thing. Another concern makes coffee out of a mixture of peas, beans, clay, blood and the dregs from coffee made in hotels and restaurants. It announces it as a "substitute" coffee, entirely harmless, and having somewhat of the taste of the Java berry.

Here, then, are deliberate frauds, practiced openly; the wagons of grocers recklessly call at the factory, and the unsavory, unclean mess is taken into thousands of human stomachs, and our health officials are supine. When a certain brewery was turning out in this borough what a Brooklyn health inspector discovered to be the worst beer that was made, the same thing occurred. The brewers were not warned, were not interfered with, and the public is allowed to imagine a number of things. The interesting question occurs, Why should we pay health officers?

MORE FREE PUBLIC BATHS.

The proposal of Acting Mayor Guggenheimer, in August, to have public wash-houses attached to each bathing-house, where the women of the poorer classes may wash their clothes, and have them dried, is considered by the Association for the Improvement of the Condition of the Poor a most excellent addition to the first plan. An experiment of this kind was tried in New York by this association in the year 1852, but it was finally discontinued because, the Association report says, "it was too far in advance of the habits of the people, and failed for want of sufficient patronage."

"The real reason, however," said one of the officers of the Association, "was that it was not managed well, and failed, as any bath will fail in which the patronage of the people is not as carefully sought for as it would be in any business enterprise. The people's baths have been the greatest success, because practical business methods and principles have governed the management. The

building of the Public Bath Association in Philadelphia contains wash-rooms which have been a great success. The total number of washers using these facilities in 1898 was 1,333, and this increased to 1,677 in the first eleven months of 1900, which would indicate an increase for the year of 375. Having washing apparatus in the bath buildings would necessarily modify entirely their plan of construction, and would emphasize all the objections which have been brought forward before against the estimates of the size and expense of the buildings contained in Commissioner Kearney's communication.

"The officers of the Association are preparing to take action which will bring to the notice of the authorities their objections to the plan proposed, and the results of their own experiments in the line of public baths. This action will probably take the form of requesting a hearing before the Board of Estimate and Apportionment, at which R. Fulton Cutting, president of the Association, will express the Association's views on the sites selected for the bath-houses and the plans submitted."

The current number of "Charities" says:

"The agitation for more free public bathing-places in New York City has been renewed by a series of instructive articles in the 'Evening Post,' incorporating some of the information contained in Mr. Frank Tucker's special report on this subject prepared for the Tenement-House Commission, and the opinions of citizens and public officials who are in position to know the extent and urgency of the demand. It appears that there are only nine baths in Manhattan, aside from the floating summer baths, whose object is to refresh rather than to cleanse. Three of the nine, with 97 compartments in all, are free and maintained by the public. The others, with 69 compartments, charge a nominal fee, and any deficit in the expenses of their administration is met by private enterprise. If Manhattan Island were provided with bathing facilities proportionately equivalent to those already existing in Buffalo, there would be 263 free compartments, instead of 97, as at present, or 167 if the private philanthropic baths are included. The city is empowered by law to build as many public bath-houses as the Board of Health may deem necessary to the preservation of the public health. The provision is, in fact, mandatory, and it is expressly stated in the law that the erection and maintenance of river and ocean baths shall not be deemed a compliance with the law. What is needed is a large number of small, inexpensive baths, scattered throughout the crowded districts."

PRECAUTIONS AGAINST THE DANGER OF BOVINE TUBERCULOSIS TO MAN SHOULD NOT BE ABANDONED.

Evidently with the purpose of putting the public on its guard against efforts to make the recent statements of Prof. Koch an excuse for relaxing precautions against tuberculosis, says the New York "Times," the chairman of the Sanitary Committee of the National Live Stock Association has issued a restatement of exactly what the German bacteriologist said, with a running commentary which the Philadelphia "Medical Journal" pronounces admirable. All the basis for the professor's suggestion that bovine tuberculosis is incommunicable to human beings—he hardly went further than a suggestion—was his failure in nineteen attempts to convey human tuberculosis to cattle. Now there is not on record a single case of experimental inoculation of a human being with either human or bovine tuberculosis, and the cases of such inoculation by accident rest on suspicious evidence. The proof of contagion from man to man, therefore, is no better than that from cattle to man, yet no one doubts it. The only positive result obtained by Prof. Koch was that bovine tuberculosis can be conveyed to cattle, and this is a narrow ground on which to build a great superstructure of doctrine and practice. It has been demonstrated by others, however, that bovine tuberculosis can be communicated to other animals, and that its action on them is even more violent than that of human tuberculosis. Whoever wants to make inferences in a matter that can properly be settled only by observed facts has some reason for concluding that the bovine infection is particularly dangerous for men also. Plainly, the situation is not one to justify the slightest diminution of care with respect to tuberculous cattle. The precautions now taken are at worst only useless, and the theory of their uselessness is antagonized rather than sustained by the actual knowledge now available.

THE BLACK DEATH.

The pity and sympathy of compassionate New York may well go out to hapless Cape Colony, observes the New York "Tribune," where the bubonic plague is raging with great virulence and the death rate climbing to figures which cause serious anxiety. In America this hideous pestilence has been almost unknown except in the filthiest quarters of the Chinatown of San Francisco. It is generally believed among experts that it is not likely to spread to any serious extent among Europeans and Americans in communities in which the streets, the sewers and the homes in the districts

crowded by the poor are kept in proper sanitary condition. There is no occasion for alarm over the possibility of the plague gaining a foothold in New York and claiming a host of victims here, as it has done in congested centres of population in Asia.

Nevertheless, this is the true Black Death which swept over Europe in the time of Boccaccio, and sent millions of men, women and children to a premature doom. It is the same plague which made a charnel house of London when the Merry Monarch was on the throne, and its destructive conquest of the British capital was vividly described by De Foe. Its venom and deadliness are not surpassed by the infection of any other malady which ever afflicted humanity. But, unlike small-pox, which affects the clean as well as the unclean, unless the safeguard of vaccination is made use of, the Black Death in this era rarely attacks the homes which are well cared for or the people whose habits, diet and surroundings conduce to health. Small-pox, unless warded off by the vaccine virus, is almost as likely to infect a household on Murray Hill as one on Cherry Hill, if there is exposure to contagion. And it may be remarked with truth that New Yorkers are becoming altogether too careless and indifferent in respect to vaccination. Too many of them are content to incur serious risk of small-pox, a disease which is now uncommonly prevalent in many parts of this country, and of which there are many cases in New York. And the number of these cases here is not diminishing. The Health Department is sounding loud notes of warning and is providing liberal facilities for free vaccination. But multitudes of our people insist upon shutting their ears and refuse to take heed.

The Black Death is so ghastly a horror that quarantine departments anl local health officers in every country should be on their guard and strive in every way to prevent its entrance into places where it has not yet advanced. But the peril of small-pox to the unvaccinated is grave and disturbing at the present time. If the entire population were vaccinated, small-pox would soon disappear entirely. But in the conditions of to-day it is a menace to those who refuse to armor themselves against it.

LIME AN INSECTICIDE.

Dr. Richard Waggener, writing from the Naval Proving Ground at Indian Head, Md., says he long ago found that the addition to water of a little lime would quickly rid it of the larvæ of mosquitoes. "Recently," the doctor declares, "I accidentally discovered a rain-barrel full of water which was alive with the larvæ

and pupæ of mosquitoes, the former being vastly in the majority, and I immediately seized upon this opportunity to watch the effect of lime upon them. As I was not trying to ascertain the minimum quantity of lime necessary to kill the larvæ, but only to redemonstrate to myself that lime would do the work, I dumped my two hands heaping full of air-slacked lime into the barrel. This was done at 2.30 P. M. On inspection the next day at 7.30 A. M. there was not a single live larva in the barrel, but the number of pupæ was apparently undiminished. Another inspection at 5 P. M. the same day showed no live pupæ or larvæ, and the water, which before the introduction of the lime was dark and foul, was clear, and dead larvæ were plainly discernible on the bottom." The doctor suggests the making of careful experiments to discover whether slacked or unslacked lime is the better for this purpose, and the least amount of it necessary to accomplish the desired end. He also notes, as bearing on the matter, the observed absence or scarcity of mosquitoes in typical limestone regions, and the fact that yellow fever is never epidemic in such localities.

OZONIZED AIR REQUIRED.

The London correspondent of the New York "Herald," August 25, states that among the numerous benefits London expects from Yerkes and other Yankee tube-makers to supply is ozonized air in circumambient abundance. It is argued that, since the Americans have been given the opportunity to honeycomb the city with underground railways promising large dividends, they should be required to convert them into health resorts by the generation of ozone. One newspaper informs Mr. Yerkes that a trip around the inner circle district road under its new management ought to be equivalent to a week at Brighton.

The learned "Lancet," the voice of medical wisdom in London, falls in with the suggestion for ozonized tubes, and declares that like comforts and aids to health should be furnished by the surface railways and omnibuses. It says: "Railway headache is without doubt due to the impure, rebreathed air of the carriages. Many ventilation contrivances exist, but all are more or less abortive. Nothing freshens and sweetens stale air better than ozone. Now most railway companies have successfully adopted a system by which each carriage on its journey develops, by means of a dynamo attached to the axletrees, its own current of electricity for lighting purposes. There is no reason why the same current should not be utilized at the same time to ozonize the air of a compartment.

"The quantity of ozone required is small, and there is really no serious obstacle in the way of having air in our tubes, tramcars and railway compartments. Fresh sea breeze automatic ozonizers might even appeal to the directors and shareholders of the district steam underground line as an alternate scheme for electric traction."

The "Lancet" gives the weight of its authority to the assumption that air in omnibuses is thoroughly vitiated and unhealthful. It ventures the opinion that the death rate of the metropolis would be markedly reduced if these vehicles also carried automatic ozonizers. Unfortunately, the "Lancet" questions whether omnibuses move fast enough to generate a respectable current of electricity.

THE HYGIENE OF FASTING.

Almost all the great founders of religions have deemed it salutary to prescribe a certain amount of fasting for their disciples. The reason for this, says a writer in the "Blätter für Volksgesundheitspflege," as translated in the "Literary Digest," is not only the knowledge that it is well for man to conquer his bodily desires, but also the experience that most persons eat too much. To overload the stomach with food is not less unhealthy than to deluge it with beverages; the more nutritious the food the more hazardous are the consequences when excess is habitual. Of all the sins of nutrition, the immoderate use of meat is certainly the most grievous. It gives to the body in a form that is favorable for easy assimilation the albumen that is absolutely necessary to life, and hence the earliest effect of its excessive use must be to surcharge the body with nutrients.

The chief point here is the critical examination of what is called hunger. Many persons believe that any and every sensation of hunger must be satisfied immediately, but this is a great mistake. An equally great, if not worse, mistake is the opinion that one must eat until a sense of satiety arises. These two mistakes combined lead to an unfavorable development of the human body, for the weight of the body grows to a degree that is detrimental to the activity of most of the chief and finer organs. For every stature an approximate weight may be stated that may be accepted as normal, and in accordance with this weight are adjusted the vital organs, particularly the heart. When a heart has volume sufficient only for a body of 150 pounds and is put to work to satisfy the demands of a body of 200 pounds, it soon shows that it is unequal to the task. It is just as if an engine that was built to pull

only a prescribed weight were used to pull a large additional weight. The activity of the other organs as well as of the heart is hindered by the fat that is deposited about the latter. Excessive nutrition injures the mental capabilities also. Of the particular consequences of excessive nutrition, such as hypochondria (the very name of which refers the reader to the region of the abdomen) and the gout, it is hardly necessary to speak.

SOCIETY FOR SANITARY AND MORAL PROPHYLAXIS.

The Belgian Government has appropriated $400 to assist in defraying the expenses of the quarterly issued as the "Bulletin of the International Society for Sanitary and Moral Prophylaxis." The first number has already appeared, and contains a fine article on the Prophylactic Congress, with outlines of circulars for collecting general statistics, etc., and among others communications from Neisser and Minod on the importance of personal prophylaxis against venereal infection, and minors as prostitutes.

TO NURSE LEPERS.

ST. LOUIS, Mo., Aug. 20.—Dr. Louis Knapp, aged 40, a practising physician of this city, has separated himself from his wife and four children, and will become isolated from the world, to nurse Dong-Gong, a Chinese leper, who was found here two weeks ago. The doctor, who is a graduate of a Detroit medical college, took final leave of his family to-day.

Dr. Knapp and his patient will live in a three-room frame house now being built by the city authorities at quarantine until the necessity for his service shall have ended. Dr. Knapp will take his library to quarantine, and devote the greater part of his time to the study of leprosy. There were five other applicants for the position.

ROYAL COMMISSION ON TUBERCULOSIS.

LONDON, Sept. 3.—King Edward has appointed a commission to investigate Prof. Koch's new tuberculosis theory. The scope of the inquiry is officially said to be to find whether animal and human tuberculosis are identical, whether animals and humans can be reciprocally infected, under what conditions (if at all) transmission to man occurs, and the means of combating it. The Commissioners are Sir Michael Foster, Secretary of the Royal Society; Dr. Sims Woodhead, Professor of Pathology, Cambridge University; Dr. Harris Cox Martin, Professor J. McFadyean and Professor R. W. Boyce. The commission has the fullest powers and facilities, and the members have been urged to make a prompt report.

CARNEGIE'S GIFT TO THE CITY OF NEW YORK ASSURED.

Andrew Carnegie's signature has been attached to the formal agreement with the city of New York by which sixty-five public libraries will be established at a cost to Mr. Carnegie of $5,200,000. The agreement was drawn up by George L. Rives, one of the board of directors of the New York Public Library, and Corporation Counsel Whalen and Controller Coler. The ideas which Mr. Carnegie wanted in the document by which the city would agree to maintain the libraries in perpetuity were drafted to the satisfaction of the donor.

In the negotiations Dr. John S. Billings, director of the New York Public Library, acted as the agent of Mr. Carnegie.

After the city officials sign the agreement to maintain the libraries, the work of providing sites will be actively begun. Corporation Counsel Whalen has prepared a map showing the existing libraries, and efforts will be made to establish the new ones so that every section of the city will have a library building.

MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

THE ASSASSINATION OF THE PRESIDENT.

No words at our command are adequate to duly express our sense of horror, in common with that of the whole American people, of the crime of the assassin Czolgosz against the life of President McKinley, by two pistol shots, September 6, whose death occurred on the eighth day thereafter, September 14, 1901.

No coroner's inquest was held, but a certificate was given, in accordance with the result of the autopsy performed by the attending surgeons, as follows:

"BUFFALO, Sept. 14, 1901.—The bullet which struck over the breast bone did not pass through the skin, and did little harm.

"The other bullet passed through both walls of the stomach near its lower border. Both holes were found to be perfectly closed by the stitches, but the tissue around each hole had become gangrenous.

"After passing through the stomach the bullet passed into the back walls of the abdomen, hitting and tearing the upper end of the kidney. This portion of the bullet track was also gangrenous, the gangrene involving the pancreas. The bullet has not yet been found.

"There was no sign of peritonitis or disease of other organs. The heart walls were very thin.

"There was no evidence of any attempt at repair on the part of Nature, and death resulted from the gangrene which affected the stomach around the bullet, as well as the tissues around the further course of the bullet.

"Death was unavoidable by any surgical or medical treatment and was the direct result of the bullet wound.

"(Signed) "Harvey D. Gaylord, M. D.
"Herman G. Metzinger, M. D.
"P. M. Rixey, M. D.
"Matthew D. Mann, M. D.
"Herman Mynter, M. D.
"Roswell Park, M. D.
"Eugene Wasdin, M. D.
"Charles G. Stockton, M. D.
"Edw. G. Janeway, M. D.
"W. W. Johnson, M. D.
"W. P. Kendall,
Surgeon U. S. Army.
"Charles Cary, M. D.
"Edward L. Munson,
Assistant Surgeon U. S. A.
"Hermanus L. Baer, M. D."

OBITUARY.

THOMAS J. TURNER, A. M., M. D., Ph. D., Medical Director U. S. Navy (retired), Coldwater, Mich., died at the home of a friend, Mackinac Island, August 20, 1901.

Dr. Turner was born in Philadelphia, September 21, 1829. He entered the navy as assistant surgeon in 1853. He was promoted to surgeon in 1862, and was almost constantly on sea service until 1867, when he was a member of the Board of Examiners, and was recorder of that board in 1868-1869. He was fleet surgeon of Admiral Farragut's fleet, and attached to the *Hartford* in the great naval battle in Mobile Bay, August 5, 1864. On April 26, 1872, he was commissioned medical inspector, and was on special duty in Washington for three years. He was fleet surgeon, Asiatic station, from 1875 to 1877, and was secretary of the National Board of Health from 1882 until 1883. In 1879 he was promoted to Medical Director. From 1884 to 1886 he was a member of the

Medical Retiring Board, and was in charge of the Museum of Hygiene from 1886 to 1889. September 21, 1891, having reached his 64th birthday, he was retired by age limitation. He soon thereafter became a resident of Coldwater, Mich., and ever since, to the time of his death. Dr. Turner was the foremost sanitarian in the navy, and the means of important reforms. He continued his interest in sanitation after his retirement, insomuch that he accepted the position of health officer of Coldwater, which office he filled for several years and held at the time of his death. He stirred up the people to a due appreciation of practical sanitation, and brought about signal improvements in sanitary administration. His lucid reports and occasional suggestive leaflets on sanitary work there were eagerly sought by other communities, and have been of much practical utility elsewhere.

Dr. Turner was a comprehensive reasoner, close student, and erudite scholar. He was the author of several important essays and contributions to current literature on sanitary subjects of standing utility. By his death THE SANITARIAN has lost one of its most esteemed collaborators and contributors, whose memory will be cherished as a firm friend and devoted colleague.

NEW YORK.—Bulletin of State Department of Health reports for July: Population, 7,268,000; total deaths, 12,298; death rate, 19.8; deaths under five years, 4,344; percentage of deaths under five years to total deaths, 35.5; from zymotic causes per thousand from all causes, 236; from cerebro-spinal meningitis, 51; typhoid fever, 99; malarial diseases, 24; smallpox, 89; scarlet fever, 105; measles, 79; erysipelas, 17; whooping cough, 73; croup and diphtheria, 125; diarrhœal diseases, 2,234; acute respiratory diseases, 602; consumption, 1,072; puerperal diseases, 79; diseases of digestive system (not diarrhœal), 615; urinary system, 779; circulatory system, 829; nervous system, 1,183; cancer, 434; accident and violence, 2,021; old age, 416; unclassified, 1,372.

City of New York, 3,536,517: Total deaths, 7,699; death rate, 25.6; deaths under five years, 2,283; from cerebro-spinal meningitis, 26; typhoid fever, 56; malarial diseases, 16; smallpox, 80 (smallpox during the three weeks ending August 17, 133 cases with 33 deaths); scarlet fever, 93; measles, 57; erysipelas, 6; whooping cough, 24; croup and diphtheria, 102; diarrhœal diseases, 1,781; acute respiratory diseases, 425; consumption, 639; cancer, 220.

Borough of Manhattan, 1,873,562: Total deaths, 4,068; death

rate, 25.5; deaths under five years, 4,068; from cerebro-spinal meningitis, 19; typhoid fever, 30; malarial diseases, 3; smallpox, 8; scarlet fever, 41; measles, 36; erysipelas, 4; whooping cough, 11; croup and diphtheria, 64; diarrhœal diseases, 754; acute respiratory diseases, 255; consumption, 311; cancer, 134.

Borough of the Bronx, 222,124: Total deaths, 493; death rate, 26.7; deaths under five years, 187; from cerebro-spinal meningitis, 3; typhoid fever, 1; malarial diseases, 2; smallpox, 72; scarlet fever, 2; erysipelas, 1; whooping cough, 2; croup and diphtheria, 6; diarrhœal diseases, 68; acute respiratory diseases, 8; consumption, 99; cancer, 13.

Borough of Brooklyn, 1,209,064: Total deaths, 2,628; death rate, 25.4; under five years of age, 1,247; from cerebro-spinal meningitis, 4; typhoid fever, 19; malarial diseases, 6; scarlet fever, 45; measles, 21; erysipelas, 1; whooping cough, 8; croup and diphtheria, 25; diarrhœal diseases, 802; acute respiratory diseases, 147; consumption, 190; cancer, 60.

Borough of Queens, 162,834: Total deaths, 342; death rate, 24.6; from typhoid fever, 3; malarial diseases, 3; scarlet fever, 4; whooping cough, 1; croup and diphtheria, 5; diarrhœal diseases, 109; acute respiratory diseases, 7; consumption, 24; cancer, 7.

Borough of Richmond, 68,933: Total deaths, 168; deaths under five years, 72; death rate, 28.6; from scarlet fever, 1; whooping cough, 2; malarial diseases, 2; croup and diphtheria, 2; diarrhœal diseases, 48; acute respiratory diseases, 8; consumption, 15; cancer, 9.

Malaria.

President Sexton, Dr. Cosby and Health Officer Doty met on August 30 as a Board at the Health Department and took important action in regard to malaria. It was prompted by a communication from Dr. Herrmann M. Biggs, pathological director of the hospital bacteriological laboratories of the department, in which he called attention to the prevalence of malaria and suggested that special attention be given to the subject. In accordance with his suggestions, resolutions were adopted, declaring malarial fever an infectious disease, and requiring reports of its existence and conditions, with a view to its prevention. For this salutary purpose the public is indebted to the recently discovered function of the malaria-spreading mosquito. That the common sources of both malaria and mosquitoes, long since known, have not heretofore attracted the attention of the Department of Health is very remark-

able. The action now is evidently incited by the bacteriologists, since having well-equipped laboratories. But their dependence for material in this respect—obstructed drains and stagnant pools—should be made the primary objects of destruction; for, no matter what additional knowledge of the functions of the mosquito may be acquired, enough is known to warrant the destruction of its breeding places as the primary source of malaria.

Albany, 94,151: Total deaths, 142; death rate, 20.7; deaths under five years, 30; from croup and diphtheria, 1; diarrhœal diseases, 11; acute respiratory diseases, 6; consumption, 17; cancer, 5.

Syracuse, 108,374: Total deaths, 145; death rate, 15.8; deaths under five years, 44; from cerebro-spinal meningitis, 2; typhoid fever, 2; diphtheria, 1; diarrhœal diseases, 28; acute respiratory diseases, 5; consumption, 15; cancer, 7.

Buffalo, 352,387: Total deaths, 467; death rate, 15.6; deaths under five years, 187; from cerebro-spinal meningitis, 5; typhoid fever, 3; scarlet fever, 3; measles, 1; whooping cough, 5; croup and diphtheria, 3; diarrhœal diseases, 100; acute respiratory diseases, 30; consumption, 39; cancer, 19.

Rochester, 162,658: Total deaths, 187; death rate, 14.0; deaths under five years, 49; from cerebro-spinal meningitis, 2; typhoid fever, 2; diarrhœal diseases, 33; acute respiratory diseases, 4; consumption, 8; cancer, 14.

CALIFORNIA.—Los Angeles, 102,479. Report for July: Total deaths, 150; death rate, 17.56; deaths under five years, 16; from cerebro-spinal meningitis, 1; typhoid fever, 2; diphtheria, 1; diarrhœal diseases, 4; acute respiratory diseases, 9; consumption, 31; cancer, 7.

COLORADO.—Denver, 150,000. Report for July: Total deaths, 254; death rate, 20.3; deaths under five years, 73; from typhoid fever, 1; scarlet fever, 4; measles, 4; diphtheria, 4; diarrhœal diseases, 39; acute respiratory diseases, 16; consumption, 58; cancer, 10.

CONNECTICUT.—The State Board of Health Bulletin reports for July: Total deaths in 166 towns, with an aggregate population of 905,856, 1,297; death rate, for the large towns, 18.1; small towns, 14.4; for the whole State, 17.1; deaths under five years, 423; from cerebro-spinal meningitis, 6; typhoid fever, 13; malarial diseases,

14; smallpox, 1; scarlet fever, 8; measles, 4; whooping cough, 8; croup and diphtheria, 9; diarrhœal diseases, 247; acute respiratory diseases, 55; consumption, 113.

At a meeting of the State Board of Health, August 21, several new rules were adopted in virtue of the law passed at the last session of the Legislature, which provides that after August 31, 1901, no regulations of town or city health officers shall be valid unless approved by the State Board of Health.

A proposed regulation concerning the carrying of garbage of one town into another came in for a long discussion, but was postponed for further consideration. Regulations concerning the reporting of contagious and infectious diseases were adopted. One of the most important changes from the regulations of this kind heretofore in force was the addition of consumption to the list of infectious diseases which must be so reported. Another rule adopted requires that every householder shall report cases of infectious or contagious diseases occurring in their houses when physicians are not called to attend the patients. Another provides that until permission is received from the health officer, no clothing or other property which shall have been exposed to infectious or contagious diseases shall be removed from the house, nor shall the occupants of such house change residence without the consent of the health officer.

A rule was also adopted which provides that no superintendent of schools, principal, teacher, parent or guardian shall permit children suffering from infectious diseases, including itch, lice and consumption, to attend school.

Other approved regulations provide that health officers may quarantine houses wherein there are cases of contagious or infectious diseases; that placards may be placed on houses wherein such diseases exist, and that no one shall spit on the floors of public buildings or trolley cars.

School Sanitation.

Preliminary to the beginning of the fall term of the schools in New Haven County, Health Officer Hoadley had all the schoolhouses examined and fumigated to prevent any possibility of contagion. Some time ago he instructed all the town health officers to inspect all the school buildings and to see that they were in good sanitary condition for the beginning of the fall term. The order to the town health officers applies to the country districts. In the cities of the county the health boards attend to such matters, and

the County Health Officer has not interfered. During the past summer there has been a great deal of typhoid fever and other diseases in the county, and extra precautions were taken this year to see that the germs, if there were any, were destroyed.

In cases where the health officer had any doubt of the sanitary condition of a school building after making an examination of the premises, he was under instructions to thoroughly fumigate it. The health officers were also instructed to examine the water supplies in all the towns and to inspect closets and outbuildings. Some of the town health officers discovered conditions that were regarded as dangerous, but on the whole the schoolhouses were found to be in good shape. In many places the children in the country schools get their drinking water from wells and pumps, and these supplies are apt to become contaminated during the summer months. In some places the wells had to be cleaned out. But the water supplies were all reported pure before the opening of the schools.

DISTRICT OF COLUMBIA, 278,718. Report for five weeks ending August 31: Total deaths, 571; death rate, 19.29; deaths under five years, 180; from typhoid fever, 30; scarlet fever, 2; croup and diphtheria, 3; malarial diseases, 7; whooping cough, 21; diarrhœal diseases, 86; acute respiratory diseases, 26; consumption, 78; cancer, 19.

ILLINOIS.—Chicago, 1,758,025. Report for July: Total deaths, 2,263; death rate, 13.80; deaths under five years, 892; from cerebro-spinal meningitis, 1; typhoid fever, 55; scarlet fever, 11; measles, 31; whooping cough, 25; croup and diphtheria, 27; diarrhœal diseases, 241; acute respiratory diseases, 148; consumption, 188; cancer, 84.

Outbreaks of the following infectious diseases have been reported as having occurred at the several places named during the month of July: *Diphtheria,* Norway. *Scarlet fever,* Grimes and Union townships, Cerro Gordo county; Merservey; Providence township, Buena Vista county; Liberty township, O'Brien county; Sulphur Springs; Lee township, Madison county. *Smallpox,* Waucoma; Red Oak township, Montgomery county; Fairport; Rock Valley; Winterset; Welcome township, Sioux county; Fraser; Belle Plaine; Alton; Corydon; Boone; Madison township, Butler county; Palo; Lake City; Jasper township, Carroll county; Hamburg; Denison; Lucas; Cleveland; Le Mars; Arion; Springville; Dow City; Louise; Hamilton and Dodge townships, Boone

county; Vienna township, Marshall county; Grant township, Buena Vista county; Wall Lake township, Sac county; Boyden; Jasper township, Adams county.

INDIANA.—The number of deaths reported for August was 2,932; death rate, 13.7. For the corresponding month last year there were 3,221 deaths; death rate, 14.3. Compared with the preceding month, July, there is a decrease in the number of deaths of 230. The number of deaths under one year of age was 621; 1 to 5 inclusive, 343; 65 years and over, 621. Important causes of death were as follows: Pulmonary tuberculosis, 319; other forms of tuberculosis, 48; deaths from typhoid fever, 137; diphtheria, 16; scarlet fever, 5; whooping cough, 19; pneumonia, 63; diarrhœal diseases, 464; cerebro-spinal meningitis, 27; influenza, 9; puerperal fever, 6; cancer, 69; violence, 132.

Comparison of cities and country: All the cities of the State, having a population of 847,302: Deaths, 1,150; death rate, 16. The country deaths number 782; death rate, 12.5. In all but one cause of death, namely, typhoid, the country presents a less rate than the cities.

IOWA.—Davenport, 40,000. Report for July: Total deaths, 62; death rate, 21.10; deaths under five years, 18; from diarrhœal diseases, 4; acute respiratory diseases, 1; consumption, 6; cancer, 1.

KANSAS.—The Secretary of the State Board of Health reports for July: Smallpox, at 13 places, with an aggregate of 90 cases, no deaths.

LOUISIANA.—New Orleans, 300,000—80,000 colored: Report for July: Total deaths, 574, 212 colored; death rates, white 19.74, colored 31.80, total 24.12; deaths under five years, 151, 58 colored; from typhoid fever, 19; scarlet fever, 1; whooping cough, 3; croup and diphtheria, 1; diarrhœal diseases, 47; acute respiratory diseases, 25; consumption, 78; cancer, 24.

MARYLAND.—Baltimore, 541,000. Report for July: Total deaths, 1,260; death rate, 27.50; deaths under five years, 606; from typhoid fever, 11; scarlet fever, 1; whooping cough, 3; croup and diphtheria, 7; diarrhœal diseases, 325; acute respiratory diseases, 42; consumption, 93; cancer, 34.

MASSACHUSETTS.—Boston, 573,579. Report for June: Total deaths, 813; death rate, 17.09; deaths under five years, 239; from

cerebro-spinal meningitis, 5; typhoid fever, 6; measles, 14; scarlet fever, 12; whooping cough, 5; croup and diphtheria, 30; diarrhœal diseases, 14; acute respiratory diseases, 69; consumption, 114; cancer, 28.

Bathrooms in the Schools.

In the future Boston's public school buildings are to contain well appointed bathrooms. The impulse was given two years ago, when the Paul Revere school was erected, and now bathrooms are to become a regular adjunct of the public school system. When a child presents himself for admission at one of the public schools, with a questionable regard for cleanliness, it will be the first duty of the teacher to lead him to the bathroom and instruct him in one of the first requisites of godliness and good citizenship. Five new schoolhouses opened this fall, each provided with bathrooms. The teachers in the Revere school report that under the beneficent rule of cleanliness the scholars are better in every way, they themselves are able to do more work by seeing clean children all day, and the school work has increased in results.

New Bedford is reported ("Fall River News," August 19) to have an epidemic of *typhoid fever.* During the week ending August 17, 23 new cases were reported, and inquiry at the office of the board reveals the information that upwards of 40 known cases were then under treatment.

Malaria Far-fetched.

Secretary Abbott, of the State Board of Health ("Boston Record," August 29), says that during the past ten years every case of malaria investigated in Massachusetts has been traced to the presence in the neighborhood of Italian laborers. Italy, it is well known, is cursed by malaria.

In its report on the sanitary condition of the Sudbury and Concord rivers made to the general court in May, the board stated plainly that there was nothing in the condition of the meadows near these rivers to generate malaria. But since 1890 191 cases have been reported in the distance of ten miles along the river from Saxonville, in a population of about 500. Few cases, the board says, had been reported below this point previous to 1895, and not many until 1898, since which time it has prevailed in Concord and at Billerica. In both cases, the board says, "the evidence tends to show that it was introduced into these towns by the laborers engaged in digging up the streets when constructing the water works

and sewerage systems. . . . Upon the completion of the works in Billerica the number of cases rapidly diminished, while in Concord the effect of the work continued through last year, and we must wait through another season to learn whether it also diminishes here." As to other sections, the board expressed the opinion that were the water lowered to cultivate the meadows, pools would remain, where mosquitoes would breed, to communicate malaria.

Last week Dr. Abbott visited Ipswich to look into some cases of malaria in a farming district. He found four isolated houses, where the disease had prevailed for two years, and also found that Italian workmen had been laboring near two years ago, coming to each house often for water, etc.

MICHIGAN.—There were only 2,672 deaths returned to the Secretary of State for the month of August, corresponding to a death rate of 13.1 per 1,000 population. Owing to the absence of extreme heat during the greater portion of the month, the deaths of infants under one year of age, 646, were not as numerous as usual, although they constituted over 25 per cent. of the total deaths. There were 210 deaths of children aged 1 to 4 years, inclusive, and 615 deaths of persons aged over 65 years. Deaths from pulmonary tuberculosis, 153; other forms of tuberculosis, 28; typhoid fever, 48; diphtheria and croup, 23; scarlet fever, 18; measles, 1; whooping cough, 15; pneumonia, 50; diarrhœal diseases under two years of age, 398; cancer, 128; accidents and violence, 206; the latter included 44 deaths from drowning.

The only diseases showing marked increases for the month, as compared with July, were typhoid fever and diarrhœal diseases of infants. With both of these the deaths reported were much below the number for the same month of 1900.

MINNESOTA.—St. Paul, 165,000. Report for July: Total deaths, 165; death rate, 12.0; deaths under five years, 75; from scarlet fever, 1; croup and diphtheria, 8; diarrhœal diseases, 37; acute respiratory diseases, 11; consumption, 22; cancer, 8.

Smallpox Stamped Out.

Minneapolis ("Times," August 3): Just one year ago Minneapolis was seriously threatened with an epidemic of smallpox, the existing pesthouse was in wretched condition and totally inadequate, and the city had no available funds with which to meet the emergency. The meeting appointed a finance committee to solicit

funds from citizens, to be repaid by the city as soon as possible. Through the generosity of the citizens of Minneapolis, the new quarantine hospital was erected and completed. It was dedicated upon the 26th day of January, 1901. It came none too soon, for after moving what patients there were into the new buildings, that very night there was a call for the use of the private building.

"Since Jan. 1, 1901," Health Commissioner Hall states, "we have cared for 215 patients ill with smallpox, all but one of whom were cared for, a part of the time at least, in the new buildings. In the new buildings the patients have had comfortable, warm and well ventilated rooms, absolutely new beds, and, in addition to all this, what is so indispensable in the proper treatment of smallpox, the benefit of baths. Such a thing as a bath was practically impossible in the quarters that had previously been in use. All this has brought about a genuine evolution, and from a veritable 'pest-house' it has developed into a thoroughly modern quarantine hospital. The name 'pest-house' is now never used, not even by the patients themselves.

"We have had in the city, from the first of the year up to the present time, 299 cases, and of this number 215 have been cared for at the quarantine hospital. In addition to those sick with the smallpox we have cared for 36 suspects, or those who, having been exposed to the disease, we were obliged to detain for the usual 14 days. But three of these developed the disease, proving amply that it is not practicable to have the detention hospital upon the same grounds as the quarantine hospital.

"To prove the efficacy of isolation, vaccination and disinfection, we have but to cite the fact that of the whole number of cases at the quarantine hospital, 77 came from private houses, and all persons exposed having been carefully vaccinated, the premises thoroughly disinfected, and the patients themselves removed, in no instance was there a secondary case. Without a quarantine hospital such results could never have been obtained.

"With but the exception of a kitchen and dining-room, the hospital is complete in its equipment. The cooking has all been done in the superintendent's house, and the food carried upon trays to the patients. This has necessitated a great deal of extra work. Early in April, as soon as the weather permitted, we put up a tent which has since served as a kitchen and dining-room. If the citizens' committee should have sufficient funds, after completing the fencing of the grounds, which is at present being done, I would suggest that no better use could be made of the surplus than to

build a one-story building, with a basement, to be used as a kitchen and dining-room.

"We cannot say too much for the wise forethought in providing such an institution as the quarantine hospital. The smallpox patient is no longer treated as a criminal or an outcast, but is cared for humanely, and the business interests of the city are not constantly menaced by the threatenings of a widespread epidemic of this disease. This winter has proven that we stand in no fear of an epidemic of smallpox, as with our present arrangements we are well able to cope with the disease."

MISSSOURI.—St. Louis, 575,200. Report for July: Total deaths, 1,295; death rate, 28.88; deaths under five years, 427; from cerebro-spinal meningitis, 1; typhoid fever, 13; scarlet fever, 2; measles, 2; whooping cough, 21; croup and diphtheria, 24; diarrhœal diseases, 30; acute respiratory diseases, 43; consumption, 101; cancer, 53.

Increase of Typhoid Fever.

Dr. Teichmann, on August 15, forwarded to City Counselor Schumacher a letter, calling attention to the increase of typhoid fever in this city in the past three weeks. Week before last 23 cases were reported, and last week 46 cases. The cause of the increase in typhoid, according to the City Chemist, is the fall in the volume of Missouri River water and the consequent lack of dilution for the Illinois River impurities. It is confidently asserted by Chicago experts that the germs came from Kansas City, some 350 miles distant, as rolls the Missouri. According to the disclosures thus far made of the intentions of the Chicago experts, tests are to be made and vital statistics examined to show the connection between the typhoid death rate of St. Louis and those of Kansas City and Missouri River towns on the one hand and of Peoria and Illinois River on the other.

NEW JERSEY.—Hudson County (Jersey City and environs), 386,048. Report for July: Total deaths, 1,028; death rate, 32.0; deaths under five years, 469; from typhoid fever, 6; smallpox, 3; scarlet fever, 6; measles, 1; whooping cough, 5; croup and diphtheria, 14; diarrhœal diseases, 112; acute respiratory diseases, 48; consumption, 71.

Paterson, 107,633. Report for July: Total deaths, 196; death rate, 22.40; deaths under five years, 79; from typhoid fever, 3;

whooping cough, 2; diarrhœal diseases, 39; acute respiratory diseases, 3; consumption, 21; cancer, 10.

Newark, 250,000. Report for five weeks ending August 31: Total deaths, 563; death rate, 23.39; deaths under five years, 282; from typhoid fever, 6; scarlet fever, 2; smallpox, 5; measles, 3; whooping cough, 11; croup and diphtheria, 4; diarrhœal diseases, 198; acute respiratory diseases, 28; consumption, 34; cancer, 25.

Smallpox has become ("True American," September 2) so prevalent in Newark that an epidemic is feared as soon as the cooler weather sets in, and urgent demands are being made for a general and compulsory vaccination, and for the provision of a suitable hospital building for the isolation of patients.

Trenton ("Times," August 25): The epidemic of typhoid fever, instead of being on the decrease, seems to be developing and spreading. There are now fourteen cases at St. Francis Hospital, and several of these have been pronounced as being typhoid during the past couple of days. One ward in the male department of the hospital is filled up entirely with typhoid cases, and there are a number of patients suffering with the disease in the female wards.

North Carolina.—The State Board of Health Bulletin reports for July: Total deaths in 24 towns, with an aggregate population of 137,880 (52,860 colored), 207 (164 colored); death rates, white, 18.8, colored 37.2, total 25.8; deaths under five years, 124 (71 colored); from typhoid fever, 26; malarial fever, 14; diphtheria, 3; whooping cough, 11; pneumonia, 4; consumption, 32; nervous diseases, 7; heart diseases, 14; diarrhœal diseases, 56; violence, 6; all other causes, 124.

The State Board of Health has made its annual report on smallpox, showing 1,945 cases, which is nearly 1,000 less than during the year previous. Of the cases, 530 were of whites. There were 36 deaths, 15 of which were of whites.

Ohio.—The State Board of Health Bulletin reports the cases of infectious diseases for the ten weeks ending August 10, 1901, as follows: Number of places reporting, 66; aggregate population, 1,265,850; croup and diphtheria, 201 cases, 29 deaths; scarlet fever, 330 cases, 9 deaths; typhoid fever, 275 cases, 76 deaths; whooping cough, 72 cases, 8 deaths; measles, 1,497 cases, 19 deaths.

Cleveland, 395,000. Report for July: Total deaths, 618; death rate, 19.4; deaths under five years, 296; from cerebro-spinal meningitis, 3; typhoid fever, 15; smallpox, 3; scarlet fever, 3; measles,

4; diphtheria, 3; diarrhœal diseases, 117; acute respiratory diseases, 30; consumption, 28; cancer, 25.

Cincinnati ("Times-Star," August 24): *Typhoid fever* has spread rapidly during the past two weeks. During the week of August 17, 31 cases were reported, two of which resulted fatally. The report for the week previous is even in excess of this.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for five weeks ending August 31: Total deaths, 2,359; deaths under five years, 895; from cerebro-spinal meningitis, 4; typhoid fever, 62; smallpox, 4; scarlet fever, 8; malarial diseases, 3; whooping cough, 56; croup and diphtheria, 44; diarrhœal diseases, 381; acute respiratory diseases, 123; consumption, 273; cancer, 50.

Filtration Near at Hand.

"Great progress is being made in the new filtration system which is now being installed in this city. It is believed," "Item" says, "that by the first of next year the work will have so far progressed as to enable citizens to enjoy the benefits of pure water—a long-looked-for improvement.

"The contract, awarded in May, must be finished within five months. The work consists of filter beds and the pipe line which will bring the water down from the distributing basin to that portion of the city which will be supplied by it.

" 'The work at this point,' said Director Haddock, July 25, 'is progressing satisfactorily. There seems to be the best of reasons for the contractor finishing this portion of the system on time. The contractor at this point, in building his beds, first excavated his ground, then laid a twelve-inch clay puddle, and then the concrete floor. In the lower Roxborough plant the floor is pretty well down, while even a large number of pillars have been placed. The sand is laid upon the floor, the pillars supporting the vaulted arches which roof the bed. This roof will be sloped, sodded and seeded, and made as handsome as possible.

" 'The contractor has reached that point where he can go faster, because he is attaining a familiarity with the work. The upper plant is being excavated, and will probably not require the same length of time as the lower in which to finish it.' "

Pittsburg, 332,000. Report for five weeks ending August 31: Total deaths, 645; death rate, 20.2; deaths under five years, 288; from typhoid fever, 57; smallpox, 1; malarial fever, 2; scarlet fever, 12; measles, 5; whooping cough, 11; croup and diphtheria,

12; diarrhœal diseases, 141; acute respiratory diseases, 38; consumption, 26; cancer, 17.

"Commercial Gazette," August 24: "There are about 800 cases of typhoid fever in Pittsburgh. The number of cases during July and August will greatly exceed the number reported to the Bureau of Health for the same months last year.

"In July last year 254 cases were reported. For July this year 394 cases were reported, an increase of 140.

"The figures for August also promise to be in excess of August last year. Last year's report shows 509 cases. During this month so far 425 cases have been reported to the Bureau of Health. The last week will be the largest of the month, and a conservative estimate places the total number of cases for August at 550. Twenty-eight cases were reported yesterday. From July 1 to August 17 there were 66 deaths due to typhoid.

" 'Towns above Pittsburgh deposit their sewage in the river,' said Dr. Taylor, city physician, yesterday. 'This pollution breeds the typhoid germs, and the light rainfalls are not sufficient to wash them out. The condition of the water becomes worse toward September.' "

State Hospital Camp.

Although the officers and managers of the Free Hospital for Poor Consumptives, whose appropriation of $110,000, awarded by the Legislature, was cut down by the Government to $50,000, will push as fast as possible the work of obtaining the plans for the hospital buildings to be erected near White Haven, they will not wait until the buildings have been completed to extend the scope of the hospital's work. It is proposed to immediately establish a camp on the high land (215 acres), purchased some months ago as a site for the proposed hospital buildings at the nominal price of $2,500, through the "Christmas Fund for Poor Consumptives," to which many charitable persons in Philadelphia contributed during the holidays last year.

Plans for the proposed buildings at White Haven are in charge of a committee consisting of Dr. Charles Hermon Thomas, James Wilcox and Dr. Samuel G. Dixon. These gentlemen have already secured plans of similar existing institutions throughout the world. Dr. Thomas, chairman of the committee, expects shortly, at his own expense, to make a tour of inspection of the consumptive hospitals in this country. He will be accompanied by an architect. Building operations will probably be begun early in the fall and completed sufficiently to accommodate patients next winter.

"We expect to make this as fine an institution for consumptives as exists in the world," says Dr. Flick. "The most important results which will grow out of this appropriation will come from the influence of the State of Pennsylvania upon other States which are likewise considering the question of making provision for the consumptive poor. Pennsylvania is the third State which has fallen into line, and it is to be hoped that within a few years every State in the Union will have made ample provision for the unfortunate victims of the dreaded disease."

WASHINGTON.—Seattle, 90,000. Report for July: Total deaths, 69; death rate, 9.02; deaths under five years, 14; from typhoid fever, 1; smallpox, 2; acute respiratory diseases, 6; consumption, 8; cancer, 3.

WISCONSIN.—Milwaukee, 295,000. Report for July: Total deaths, 315; death rate, 12.60; deaths under five years, 118; from typhoid fever, 10; scarlet fever, 3; measles, 1; whooping cough, 1; croup and diphtheria, 2; diarrhœal diseases, 50; acute respiratory diseases, 15; consumption, 31; cancer, 17.

Smallpox Among the Indians.

The Milwaukee "Wisconsin," August 27, reports smallpox prevalent among the Winnebago Indians. Within a distance of three miles from Black River Falls there are 38 cases in all stages of the disease. The report of 50 cases in the towns of Brockway and Manchester is much too small, and there is no end of the plague in sight. It is impossible to have the Indians observe quarantine regulations, with the help the town has at its command. The State has practically refused to come to the aid of the town, and the Indians come and go at leisure—and the loathsome disease is spreading. Superintendent Jacobson will, no doubt, make a report to the Office of Indian Affairs, calling attention to the situation, and some help may be received from that quarter.

PHILIPPINE ISLANDS.—Manila, 244,732. Report for June: Total deaths, 621; death rate, 30.89; deaths under five years, 152; from bubonic plague, 53; cerebro-spinal meningitis, 1; dengue, 1; influenza, 10; malarial diseases, 16; typhoid fever, 8; smallpox, 3; beri-beri, 19; diarrhœal diseases, 101; acute respiratory diseases, 34; consumption, 83.

CUBA.—Havana, 255,555: Major Gorgas, Chief Sanitary Officer, July, 1901, reports: Deaths from all causes, 537, the smallest number of deaths occurring in July since 1889, with the exception of last July, when we had 518. The maximum July since the year 1889 was in the year 1898, with 1,532 deaths; the minimum, year 1900, with 518 deaths; average, 890.7. The rate per thousand is only bettered by July of 1900. This year we have a death rate of 24.99, then of 24.86.

"Of yellow fever, we make the best record ever before made for July, only four cases and one death. Two of these cases (both of which were reported as 'borras' and one of which died) occurred in children of Cuban parentage, born in Havana, having lived in this city continuously since birth. The physicians of Havana, as a body, do not recognize this disease as being yellow fever, and, indeed, both in its symptomatology and pathology, it differs widely from the disease in the adult; but the board, to which all cases of yellow fever are referred, after careful consideration, and in one of the cases after a careful autopsy and histological examination of the organs, concluded that the two cases were yellow fever. I mention these cases in some detail to show how carefully yellow fever is being reported at this time.

"Since the year 1889 the maximum number of deaths in July from yellow fever has been 168, in the year 1897; the minimum, 2, in the year 1899; the average, 70.45. This year, as the report shows, we had one death. But a greater difference still will be shown if we take the yellow fever year, which commences April 1st. Taking these four months, from the year 1889, the maximum number of deaths from yellow fever occurred in 1897, with 501 deaths; the minimum, in 1899, with 5 deaths; an average of 141 deaths. This year we had one death—that is, we have passed one-third of the year in Havana, including July, which is generally one of the more severe months for yellow fever, with only one death, and this one death would never before this time have been considered due to yellow fever. It was reported by the physician in charge as "borras."

"During the month six known cases were introduced into the city from Santiago de las Vegas, a little town of 6,120 population, situated on the railroad twenty kilometers from Havana. Of this population, 475 are non-immunes, most of whom work in cigar factories. One case of yellow fever has also been introduced into the city from Regla, a small town directly across the bay from Havana. On June 20 we had the first of these cases; July 8, the

second case; and between July 8 and 24, five other cases. Since the 24th we have had no cases here."

ALLEGED YELLOW FEVER PREVENTIVE SERUM A FAILURE.

Of the eight persons bitten by infected mosquitoes in connection with the experiments conducted by the Yellow Fever Board during the month of August, in testing the efficacy of Drs. Caldas' and Bellinzaghi's alleged preventive serum, three died. The serum was declared a failure, and the experiments discontinued. The report says that Dr. Caldas refused to show the yellow fever germ, which he claimed to have isolated. The reason for his refusal was that he had given pledges to the company that had been formed to exploit his discovery. Dr. Caldas asked the commission to test his serum by having a man previously inoculated with it bitten by a mosquito which had previously bitten a yellow fever patient. Nevertheless, he subsequently gave as one of his reasons for not believing that the man, Alonso, who had been inoculated with his serum, had yellow fever, was that mosquitoes prepared by the board, namely, by biting yellow fever patients, could not give yellow fever, but only putrid fever.

The report also says that the commission came to the conclusion that Dr. Caldas had made up his mind that the case should not be one of yellow fever so far as he was concerned, and he would not study it with a scientific spirit. This refers to the time when Alonso's disease was diagnosed as yellow fever, and the case was shown Dr. Caldas and he was asked to examine it for himself. The conclusions of the board were:

First, that Dr. Caldas kept his alleged discovery from the study of other scientists; second, that the claim made by Dr. Caldas that the yellow fever agent was found only in the intestinal tract was in direct opposition to the evidence furnished by mosquito inoculations and direct blood inoculations made by the board, presided over by Major Reed, U. S. A.; and third, that the attempt made by Dr. Caldas to immunize individuals against yellow fever by means of the serum prepared by him had failed.

The commission therefore recommends that all further experiments with the serum cease. The report is signed by Surgeon Major Havard, Dr. Gorgas, the chief medical officer, and Drs. Guiteras, Finlay and Albertini.

Drs. Caldas and Bellinzaghi arrived per steamer from Havana at the New York quarantine, Sept. 3, and were temporarily detained, as they were unable to give sufficient evidence of im-

munity from yellow fever. They complained of unfair treatment by the commission in Havana, and declared that the deaths under the experiments reported were not due to yellow fever, but to blood poisoning, the result of the mosquito bites. Dr. Caldas admitted that the man he vaccinated, Alonzo, showed no symptoms of yellow fever, but the fact that he was vaccinated, he said, demonstrated that he was saved from dying of blood poisoning like the other three subjects bitten by the yellow fever infected insects.

"The Brazilian Government having learned," Dr. Caldas reported, "how they were being treated by the War Department officials in Cuba, and that a course of experiments had been previously arranged for this fall in Rio Janeiro, cabled them to return home without delay." Hence they departed per steamer for Rio Janeiro, September 5, where there is no lack of yellow fever for the continued prosecution of their efforts.

BUENOS AYRES, 833,381. Report for June: Total deaths, 1,322; deaths under five years, 500; from typhoid fever, 6; smallpox, 201; scarlet fever, 37; measles, 2; erysipelas, 4; croup and diphtheria, 25; diarrhœal diseases, 80; acute respiratory diseases, 164; consumption, 134; cancer, 74.

GLASGOW, SCOTLAND, 755,730.—Annual report of Peter Fyfe, Chief Sanitary Inspector for the year 1900: Total number of deaths, 16,393; death rate, 22 per 1,000, as against 21.6 for the year 1899. The year 1900 is reported exceptional on account of the extensive prevalence of *smallpox* and the outbreak of *bubonic plague*. The first case of smallpox reported was on April 10, and before the end of the year 397 cases, the number of deaths not stated. During the currency of smallpox, and before it became seriously epidemic, August 20 and 23, the first known and certified cases of bubonic plague were reported. Stringent and comprehensive measures were at once taken by the Committee on Health to combat it, and by the 20th day of September the last case was admitted to Belvidere.

"The localities where the disease originated—viz., 71 Rose street and 57 Thistle street, on the south side of the river—are both inhabited by a low-class population, whose habits are far from clean. The work of ridding these places of their inhabitants—the infected patients being taken to Belvidere, and those who had been in contact with them to one of the reception-houses—and thereafter disinfecting and cleansing their dwellings and all their surroundings,

was immediately entered upon. A free hand was given to the officials, and, with the valuable co-operation of the Master of Works and the Superintendent of Cleansing, the common sewers and the ashpits, as well as all the areas, courts, passages, cellars and outhouse roofs in the infected area, and even considerably beyond it, were thoroughly cleansed and scoured by special pumps with disinfectants. Six temporary inspectors were appointed, who constantly patrolled and inspected within the district, which was blocked out for house-to-house visitation, these six inspectors taking certain streets, and the six female inspectors the remainder, for this purpose during the day. The night inspectors were taken off their ordinary beats, and kept up a constant visitation of the ticketed houses within the infected area, for the purpose of preventing over-crowding, and reporting dirty houses or any sickness they observed. Rat traps were purchased and placed in charge of these inspectors. The rats caught by them, and by the professional rat-catchers who were engaged, were submitted to the Corporation Bacteriologist, who afterward reported that in no case had he discovered any evidence that the plague had been communicated to these vermin. Had his report been otherwise, and had the rats in the district—and they are many—become victims to the disease, a very distressing history of the plague in Glasgow might well have to be written. As it was, there were only 30 cases and 8 deaths in all.

"Meantime smallpox was smouldering, but it was not until the beginning of the present year that it burst into an epidemic of serious proportions. It is no respecter of persons or localities—people high and low, places sanitary and insanitary, became infected. Houses of from one apartment to those of fifteen apartments were in turn invaded. Indeed, the lowest class of dwellings, known as the "ticketed" houses of the city, were practically exempt from attack, only 18 per cent. of the victims up to the 16th of May, 1901, being removed therefrom, or 321 out of 1,785.

"With regard to infectious diseases generally, 16,684 cases were recorded during the year, or 1,149 less than in 1899, and 2,273 less than in 1898. Apart from plague and smallpox, increases over the numbers for last year fall to be recorded in the following: Croup and diphtheria, of which there were 540 cases, against 465 in 1899; typhus, 72, against 16; whooping cough, 1,972, against 804; chickenpox, 204, against 105; undefined, 13, against 7. A decrease of recorded cases took place in measles to the extent of 2,358."

Disinfection.—In the case of smallpox and plague, all bedding and every article of clothing in an infected house was removed as expeditiously as possible, no time being taken to check the goods sent to the wash-houses, as in the case of the ordinary infectious troubles. During the year 536,146 articles of clothing and bedding were washed, in addition to which 26,271 beds, pillows and bundles of infected clothing had to be treated by steam and hot air in the disinfectors.

Vaccination.—Whereas during 1899 the number re-vaccinated amounted to 420, this year there have been no less than 7,805. This was doubtless due to the prevalence of smallpox in the city during 1900, and, much as it appears, it was completely dwarfed by the amount of work which was afterwards performed during the month of March, 1901, when a rapidly organized staff of 484 (including the Nuisance Inspectors and the Epidemic Inspectors on the staff) were employed at this work in the city. From March till toward the end of April, Dr. Carmichael reports that about 38,385 re-vaccinations were done in the districts, of which 2,667 were done by the sanitary officers in infected tenements.

LOCOMOTIVE ACCIDENTS OF A MONTH IN PARIS.

Every vehicle nowadays, says the New York "Herald," has to run a severe gantlet before it can establish its claim to general recognition and everyday usefulness. The danger signal is always put up to bar its advance. Those who venture to give trial to recent inventions in locomotion seem to have no other light ahead of them but the red lamp. Besides anathemas of all sorts hurled at the newcomer by those who have hitherto held the field, innumerable perils and risks are conjured up in the interests of the public as likely to be incurred if a rival of the older means of transit should be allowed to gain free way.

It is now the turn of the automobile to pass through the experience of the steam locomotive and the bicycle.

When the horse came into general use as an aid to man's progression, doubtless there was an outcry from the conservative section of mankind that the death rate would be terribly increased. Legs, it was probably feared, might become a thing of the past, so far as concerned those who could ride or drive horses, and in any case the horse, with his propensity to shy, buck and kick, was a dangerous thing, to be avoided!

That was in the early days of civilization. When the steam engine, less than a hundred years ago, became a rival of the horse, all

these fears were loudly expressed. The railway engine came to stay, the horse remained. Both joined forces to resist the interloping tendencies of the velocipede and bicycle. Loud were the complaints against their capacity for causing accidents. The outcry had hardly died away, three or four years ago, when the wheel reached the acme of favor as a popular means of locomotion. Another object now receives the same stream of criticism. The automobile is the "dangerous animal" of the day.

To show that the fears so loudly expressed as to the increase of danger through the introduction of the motor vehicles have little foundation in fact, a French paper, the "Vélo," is keeping a regular monthly record of accidents in France. From the figures given, it appears that neither the railway, the automobile nor the bicycle competes with the horse in the number of accidents, fatal and otherwise.

In the month of March, for instance, these are the figures given in comparison for the four classes:

Accidents caused by		
The horse	77 fatal	
	739 injured	
Total		816
The railway	9 fatal	
	76 injured	
Total		85
The bicycle	3 fatal	
	66 injured	
Total		69
The automobile	3 fatal	
	29 injured	
Total		32

Percentage of accidents due to each class:

	Deaths.	Per cent.:
By the horse		83.70
By the railway		9.78
By the automobile		3.26
By the bicycle		3.26

Injured.	Per cent.:
By the horse	81.21
By the railway	8.35
By the bicycle	7.25
By the automobile	3.19

Particulars are given in the "Vélo" of the fatal accidents in each. The "shying," or swerving, of the horse in the great majority of cases is the cause of the accident. As might be expected, the fatal accidents due to the automobile, as to the bicycle, are generally those suffered by very young children and aged or infirm persons.

THE SONG OF LIFE.

One must sing of the sunshine;
One must sing of the rain;
One must sing us the songs of joy;
And one sing woe's refrain;
Yet in the end all the songs will blend
In one harmonious strain.

One must sing of the future;
With hopes and fearings rife;
One must sing of the misty past—
Its dreaming and its strife;
Yet they will meet in a chord full sweet—
The marvelous song of life.

One must sing of the mountains;
One must sing of the sea;
One must sing us the song of love;
And one in hate's shrill key;
Yet all will rise to the blending skies
In one grand harmony.

Love and hate and compassion,
Sorrow and right and wrong,
Past and future and war and peace—
Rise in an anthem strong,
And all will grow, as they ebb and flow,
To life's unceasing song.

—Josh Wink, in "Baltimore American."

BOOK REVIEWS.

A TREATISE ON THE ACUTE, INFECTIOUS EXANTHEMATA. Including Variola, Rubeola, Scarlatina, Rubella, Varicella and Vaccinia, with especial reference to Diagnosis and Treatment. By WILLIAM THOMAS CORLETT, M. D., L. R. C. P., London., Professor of Dermatology and Syphilology in Western Reserve University; Physician for Diseases of the Skin to Lakeside Hospital; Consulting Dermatologist to Charity Hospital, St. Alexis Hospital and the City Hospital, Cleveland; Member of the American Dermatological Association and the Dermatological Society of Great Britain and Ireland. Illustrated by 12 colored plates, 28 half-tone plates from life, and 2 engravings. Pages viii-392. Size, 6 1-4 by 9 1-4 inches. Sold only by subscription. Price, extra cloth, $4 net, delivered. Philadelphia: F. A. Davis Company, publishers, 1914-16 Cherry street.

"A keen recollection of the difficulties, not to mention the discomfiture, in encountering the acute exanthemata," which the author of this book tells us he encountered when he was a young practitioner, has been turned to excellent account by the production of this eminently practical work. It comprehends a lucid sketch of the early history of the exanthemata; diagnosis of them, admirably illustrated by plates of remarkable excellence, and practical deductions from extensive clinical experience, embracing practical knowledge of the diseases of the skin, which no medical student or medical practitioner can afford to do without, and which no book, to our knowledge, more lucidly inculcates.

LIBERTINISM AND MARRIAGE. By DR. LOUIS JULLIEN (Paris), surgeon of Saint-Lazare Prison, laureate of the Institute of the Academy of Medicine and of the Faculty of Medicine of Paris. Translated by R. B. Douglas. Size of page, 5 1-2 by 7 1-2 inches. Pages, v-169. Extra cloth, $1 net, delivered. Philadelphia: F. A. Davis Company, publishers, 1914-16 Cherry street.

A needful book, admirably supplied, most of all, by and to women, on a subject so generally tabooed by them as to involve their greater suffering, proportionately with their ignorance of the wiles of the libertine and of the dangers and diseases he propagates —the more, there is reason to believe, after he has become a benedict than before. That women are the greater sufferers is because

they so commonly ignore available knowledge. It is not often that books written by and for physicians, as this one has been, are particularly commendable to women. But it is exceptional. It comprehends knowledge of the utmost importance to women contemplating marriage, and is sufficiently devoid of technicalities to be easily understood.

A SLAVEHOLDER'S DAUGHTER. By BELLE KEARNEY. Cloth; 12mo. Illustrated, $1.00. New York: Abbey Press.

A lucid sketch of the conditions and primary results of the Civil War, with a special reference to Southern women. It is illustrated by an example of the innate nobility of character proverbial of Southern women, so inspired by moral courage and grit as to subdue fear and defy defeat of the women's war, into which she has enlisted, for the redemption of wrecked manhood and the promotion of social development.

It begins with a chapter on the "Old South," as a fitting introduction to the "Changed Conditions" that follow, and the "Readjustment," in which the authoress becomes an active participant. Every one of the chapters that follow is a practical lesson in virtuous enterprise, commended to all thoughtful readers. The other chapters are: "Young Ladies' Academy," "Storms of the Soul," "A Negro Sermon," "A Higher Life," "The Public School Ma'am," "Educational Matters," "The Southern Problem," "Evolution of Southern Women," "The Transformation," "Miss Frances E. Willard," "The New Career," "My First Speech," "Away Down South in Dixie," "How de Cap'n Come Thu," "A Southern Pilgrimage," "Upon the Heights," "Across the Sea," "On the Continent," "The Sorrow," "The Far West and Alaska," "The Latter-Day Saints," "In Colorado," "The Old Plantation Home," "The Last Farewell," "The Heavenly Birthday."

CONTEMPORARY LITERATURE.

The REVIEW OF REVIEWS for September is an unusual number, even for that magazine, of which the public has come to expect great things. Merely to list the contents of this issue is to enumerate the topics that now, at the approach of September, 1901, have "preferred position" in the daily news. The great steel strike, the career of Admiral Schley, the contributions of Dr. Koch to the

modern method of dealing with consumption, the rapid advance of the horseless carriage, the conditions in Kansas after the severe summer's drought, are some of the subjects treated in this number, and each subject is dealt with by an expert.

THE PHANTOM FORTRESS OF CHRISTIAN SCIENCE.

The Rev. J. M. Buckley, D. D., writes on "The Phantom Fortress of Christian Science" in the September number of the "North American Review," in answer to Mr. W. D. McCrackan's reply to his original article. Dr. Buckley wrote in the July number of the "Review" on the fallacies of Mrs. Eddy's creed, and Mr. McCrackan, a member of the Christian Science Publication Committee, replied to him under the title of "The Simple Logic of Christian Science." Dr. Buckley this month gives a rejoinder, and the three articles give the reader a good view of both sides of that important question. The basis of Dr. Buckley's argument is that Christian Science has not proved itself of practical value, and that its tenets are based on illogical grounds. He says:

"As president of the Board of Managers of the Seney Hospital in Brooklyn since its foundation, I have witnessed such miracles of surgery and medicine as would have caused the physicians and surgeons to be hanged by the pious Puritans of Massachusetts two centuries ago, had such mighty works been performed without explanation. And as one of the managers of the State Hospitals of the Insane at Trenton and Morris Plains, I have seen the maniac whose screams and violent conduct had for many doleful nights and dismal days horrified those who loved him and terrified those who tried to restrain him, sink—under the magic of sulphonal, trional or paraldehyde—into a sleep as quiet, if not as sweet, as that of a babe. I have seen him in the morning, the spell broken, the blood less rapid, the voice less strident, and, in a few months, returning to his old self and to his home. I have seen the young girl, anæmic, and muttering in the stupor of melancholia, in six weeks respond to the blood-making elements of well-selected foods, to the tonics, sedatives, the baths, the exercise prescribed, the light of reason returning in the very month prophesied by the medical director.

"To be 'out of one's senses' is a grievous affliction, to disparage the senses and the mental faculties which interpret their reports is a crime against human nature, and an imputation upon its Creator.

"For when disease undermines and tissues waste, when the brain reels under stress of agonizing pain, there is demanded a science which ages of research and experimentation have brought to the opening century—a science understanding and respecting both the body and the mind, which employs as medicine what God has endowed with suitable properties, and which enforces the regimen His order in nature and man requires.

"Understanding, faith, and prayer have their place, but if blood gushes from a desperate wound, stay not to pray; except, indeed, in that swift appeal to God for help which a true worshipper instinctively breathes in dire extremity—but lose no time in applying the cautery to stanch the blood, the cordial to sustain the patient; and, if necessary, the opiate to preserve him in quietude, or the stimulant to aid his failing heart."

PEOPLE who hold that there is an occult connection between the shape of the nose and mental characteristics will find much to confirm their opinion in the study of "Minds and Noses," which "The Living Age" for August 10 reprints from "Blackwood's."

WOMEN'S LUNCH CLUBS.

Business men are not the only New Yorkers who enjoy the privilege of lunching on the top floors of sky-scraping office buildings. In the opening article in the September "Century," Cleveland Moffett thus explains the circumstance:

"The mid-air clubs all have accommodations for ladies; this, too, is significant in our changing city life. While women are not yet members of these lofty clubs, excepting one of their own, provision is nearly always made for them in the shape of a ladies' dining-room, a ladies' reception-room, and a trim lady's maid, in cap and apron, always in attendance. So that, virtually, ladies may enjoy, and as a matter of fact are every day enjoying, all the privileges of these mid-air clubs, on the simple condition that they be the wives, sisters, daughters, or friends of members. They use the clubs as they please, order what they please, give luncheon-parties, dinner-parties, tea-parties, anything they like, and at the end it is merely necessary that some one of them sign an authorized name for the expense incurred. Needless to add that the familiar presence of ladies in these mid-air resorts gives a charm and color never found in clubs that are merely masculine in character.

"I may add that a step beyond this has been taken—a pioneer

step, we may be sure—by a club of wage-earning women, who have secured as their very own the fourteenth floor, quite at the top, of the tall Downing Building on Fulton street. This is the Business Woman's Club, and has the same fine view, the same advantages and general arrangements, found in the mid-air clubs for men, except that the furnishing is less pretentious; for everything here, from the annual rent of twenty-five hundred dollars down to the piano and plants in the reception-room, is paid for by the women themselves. And I am glad to say that this club does not owe a dollar and has a membership of nearly three hundred, although it has been in existence only a little over a year. It may encourage other working-women to know that this fine success has grown from the efforts of one young lady, a stenographer, who in the spring of 1900 made up her mind that women accustomed to nice homes should have, even if they are poor, better luncheon-places than the noisy, stifling ones on the streets, where aggressive waiters everlastingly cry 'Sinkers for two and draw one!'"

A ROOM FOR CHILDREN.

In the September "St. Nicholas," Albert Bigelow Paine tells how Professor Langley came to establish a Children's Room in the Smithsonian Institution and what it contains:

"Madame," said a great scientist, whose busy lifetime had been given to the profound researches of astronomy, biology, and aërodromics, who had wandered farther into the dim region of subtle things, and found more there, than any other living physicist—"madame, I am chiefly interested in children and fairy stories."

It was Dr. S. P. Langley, secretary of the Smithsonian Institution, who made this remark to a lady who hoped to please him with her interest in the more exact sciences. It was the same Dr. Langley who had ordered that a case of specimens should be arranged in the Institution for the benefit of children—little children, who did not care for long, hard names, and who could not see objects on high shelves.

He had ordered this case, but being very busy at the time (perhaps discovering the new solar spectrum), he could not personally oversee the work of preparation. When he did look into it, he was not pleased. There were a good many things in the case that, as one of the children, he did not care for, and there were still more things that he had expected would be there, but which had been overlooked, or not considered worth while.

Then, too, each thing had on it one of the old labels, with a long Latin name in small type; and this Dr. Langley, who, for the time being, was the disappointed child, could not or would not read.

Clearly something must be done. Solar spectrums must wait; the perfection of the flying machine must linger. Dr. S. P. Langley, the great secretary, wrote and transmitted through the proper channels a letter appointing plain S. P. Langley, the lover of children and fairy stories, as honorary curator of the children's exhibit, with instructions that, as one of the children himself, he was to see that a room was reserved and properly prepared for children—little children, who wished only to look and wonder, and to find out only such things as little folks most want to know. And, in return, S. P. Langley acknowledged and accepted his arduous and portionless task, and promised that he would do his best to have such a place, and only such things as his friends, the other children, would like. It is this bit of make-believe play, so characteristic of the child heart, that will never grow old, that is referred to in the introduction to this article, prepared by Dr. Langley himself.

But a good deal of the play may be said to have stopped with his appointment. The preparation of the room itself meant work—patient, thoughtful work in every department and detail, with the interest and entertainment of the child—the little child—always in view.

POWDERING FOOD TO KEEP IT.

Desiccated milk is one of the newer food products, and is prepared by causing a spray of ordinary fresh milk to enter a tank filled with hot air. The "atomized" fluid is carried upward, and its moisture being discharged in the form of vapor, the solid part of it is thrown down in another receptacle in the shape of a dry powder. Put up in suitable packages, this powder will keep fresh and good for a long time, and is readily made available for use by the addition of boiling water.

Eggs are now dried by a number of different processes, most of which in one way or another involve the use of a wheel that picks up the fluid egg-stuff from a tank and carries it through a hot-air chamber, sometimes by the help of a belt, where it is finally scraped off automatically and discharged in a moisture-free condition into a box. One of the most notable inventors in this line is a woman.

Similar processes are applied in the manufacture of desiccated soups, of dried beef tea, and even of "pumpkin powder," which last furnishes an always-ready material for making pumpkin pies, no matter what the season may be.

On the same principle are constructed the latest machines for making what is called "continuous ice cream," the cream for which is taken up and frozen on the periphery of a rotating cylinder that contains ice or other refrigerating material.

The same "continuous" method is being utilized for making artificial ice, instead of the old process whereby the water was frozen in metal-lined tanks with the aid of ammonia pipes behind the iron plates. According to the new plan, the water is frozen on rotating cylinders, inside of which is the chilling agent, and is scraped off as fast as it is converted into ice. The ice particles are then pressed together, forming beautiful transparent cakes.—"Saturday Evening Post."

THE DELINEATOR for October is an object lesson for the fall fashions, thoroughly displayed by beautiful illustrations, showing the style and size of apparel and decorations for women and children, and eminently practical essays on women's work and housekeeping.

THE EAGLE OR THE HEN?

Though the eagle is obviously more decorative than the hen, and therefore, justly enough, more of a favorite with both poets and painters, we have our doubts about the wisdom of the eminent Mrs. Alice Stone Blackwell in advising American women to make the mother eagle, rather than the mother hen, the representative of their aspirations. "The hen," said Mrs. Blackwell, "can do no better than cackle and scratch." Now, the hen never does those things without a good reason for the one and a high, or at least innocent and practical, purpose in the other. Moreover, the hen can do many things besides cackle and scratch, and she does them all well. The world owns a lot of hens, and though, from patriotic reasons, we are reluctant to speak severely of eagles, we really don't know of anything the very best of them have ever done for anybody except themselves—except, of course, what they accomplish by the habitual assumption of a fierce and haughty air that is spectacularly and æsthetically effective. We have read that eagles, among themselves, have always practiced those domestic virtues and customs to which humanity has only very recently attained; but they have no regard whatever for the rights or property of other birds and beasts, and, for all their grand airs, do not scruple to live by the robbery of creatures weaker than themselves. The hen, on the other hand, is gentle and good. Her notions are not advanced and she is content with a share of her

lord's affection instead of the whole of it, but she never criticises the opinions or steals the dinners of other birds.—"New York Times."

SUCH IS FAME.—The "New York Times" magazine supplement for June 16 is responsible for the following: "Some years ago,' said Bishop Potter, in a recent speech, "I was traveling in Minnesota. A man approached me on the railway platform and scanned my features closely. 'Excuse me,' he said, finally, 'but haven't I seen your picture in the papers?' I was compelled to confess that he might have done so. 'I thought so,' continued the inquisitive one. 'May I ask what you were cured of?' "—"N. Y. Med. Journal."

NEWS OF THE PROCTOR THEATRES.

Manager Proctor's Plans for the Immediate Future at His Several Theatres.

The elasticity of Manager F. F. Proctor's scheme of combining drama with interesting vaudeville numbers has been proven by the recent introduction of George Hanlon, of the celebrated Hanlon Brothers, premier pantomimists, in an acrobatic and pantomimic absurdity, called "Phunphorall."

Probably the greatest stroke of managerial enterprise, however, will be Manager Proctor's exclusive presentation of the world-renowned strong man, Sandow, who will return to America after an absence of several seasons. This celebrated person will appear exclusively at Manager Proctor's theatres in New York, Albany, Montreal and Newark, being announced to arrive in a few weeks.

While the vaudeville branch of the Proctor plan is being well provided for, there is no lack of enterprise in selecting and producing plays for presentation by the dramatic faction of the Stock Company. "A Night Off" has been presented as the first of a series of revivals of the plays made famous by the late Augustin Daly.

These and other important plans, the details of which are not ready for publication, would seem to justify Manager Proctor's claim to the presentation of an up-to-date and interesting scheme of amusement. The crowds which are constantly in attendance at all his theatres also shows that his plan of combining vaudeville with the drama has met popular and permanent approval.

THE SANITARIAN.

NOVEMBER, 1901.

NUMBER 384.

THE FUNCTIONS AND USES OF FOOD.*

By C. F. LANGWORTHY, Ph. D.,
Office of Experiment Stations.

In this circular a number of the terms used in discussing food are defined, and some of the principles of nutrition are briefly stated. The average composition of a number of the more common Americans foods is quoted, as well as the commonly accepted dietary standards. With the aid of such data, the nutritive value of any given diet may be computed and its comparative value ascertained. The method of making such calculations is given, as is also a method for calculating the digestibility of different foods.

Ordinary food materials, such as meat, fish, eggs, potatoes, wheat, etc., consist of—

Refuse.—As the bones of meat and fish, shells of shellfish, skins of potatoes, bran of wheat, etc.

Edible portion.—As the flesh of meat and fish, the white and yolk of eggs, wheat flour, etc. The edible portion consists of water and nutritive ingredients, or nutrients. The nutritive ingredients are *protein, fats, carbohydrates,* and *mineral matters.*

The water, refuse and salt of salted meat and fish are called non-nutrients. In comparing the values of different food materials for nourishment they are left out of account.

USE OF NUTRIENTS.

Food is used in the body to build and repair tissue and to furnish energy. The manner in which the valuable constituents are utilized in the body may be expressed in tabular form as follows:

*This article, which was originally published under the title "Food for Man" in the U. S. Dept. Agr. Yearbook, 1897, pp. 676-682, has been revised and contains some additional matter.—U. S. Department of Agriculture, Office of Experiment Stations, A. C. True, Director.

Protein..... White (albumen) of eggs, curd (casein) of milk, lean meat, gluten of wheat, etc.	Forms tissue (muscles, tendon, and probably fat).	All serve as *fuel* and yield *energy* in form of heat and muscular strength.
Fats..... Fat of meat, butter, olive oil, oils of corn and wheat, etc.	Form fatty tissue.	
Carbohydrates..... Sugar, starch, etc.	Transformed into fat.	
Mineral matters (ash)..... Phosphates of lime, potash, soda, etc.	Aid in forming bone, assist in digestion, etc.	

The Fuel Value of Food.—Heat and muscular power are forms of force or energy. The energy is developed as the food is consumed in the body. The unit commonly used in this measurement is the calorie, the amount of heat which would raise the temperature of a pound of water 4 degrees Fahr.

Instead of this unit some unit of mechanical energy might be used—for instance, the foot-ton, which represents the force required to raise one ton one foot. One calorie is equal to very nearly 1.53 foot-tons.

The following general estimate has been made for the average amount of potential energy in one pound of each of the classes of nutrients:

	Calories.
In 1 pound of protein.....	1,860
In one pound of fats.....	4,220
In one pound of carbohydrates.....	1,860

In other words, when we compare the nutrients in respect to their fuel values, their capacities for yielding heat and mechanical power, a pound of protein of lean meat or albumen of egg is just about equivalent to a pound of sugar or starch, and a little over two pounds of either would be required to equal a pound of the fat of meat or butter or the body fat.

Within recent years analyses of a large number of samples of foods have been made in this country. In the table below the average results of a number of these analyses are given.

Average composition of American food products. (a)

Food materials (as purchased).	Refuse.	Water.	Protein.	Fat.	Carbohydrates.	Ash.	Fuel value per pound.
ANIMAL FOOD.							
Beef, fresh:	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Calories.*
Chuck, including shoulder	17.3	54.0	15.8	12.5	.....	0.7	880
Chuck ribs	19.1	53.8	15.3	11.1	.....	.8	765
Flank	5.5	56.1	18.6	19.9	.....	.8	1,135
Loin	13.3	52.9	16.4	16.9	.....	.9	1,030
Porterhouse steak	12.7	52.4	19.1	17.9	.....	.8	1,110
Sirloin steak	12.8	54.0	16.5	16.1	.....	.9	985
Neck	21.2	45.3	14.2	9.2	.....	.7	650
Ribs	20.1	45.3	14.4	20.0	.....	.7	1,110
Rib rolls	.....	64.8	19.4	15.5	.....	.9	1,015
Round	8.5	69.5	19.2	9.2	.....	1.0	745
Rump	19.0	46.9	15.2	18.6	.....	.8	1,065
Shank, fore	28.3	43.2	12.2	5.2	.....	.6	495
Shoulder and clod	17.4	57.0	16.5	8.4	.....	.9	660
Fore quarter	20.6	49.5	14.4	15.1	.....	.7	905
Hind quarter	16.3	53.0	16.1	15.4	.....	.8	950
Beef, corned, canned, pickled, and dried:							
Corned beef	8.4	49.2	14.3	28.8	.....	4.3	1,271
Tongue, pickled	6.0	58.9	11.9	19.2	.....	4.3	1,020
Dried, salted, and smoked	4.7	53.7	28.4	6.9	.....	8.9	780
Canned boiled beef	.....	51.8	25.5	22.5	.....	1.3	1,425
Canned corned beef	.....	51.8	26.3	18.7	.....	4.0	1,280
Veal:							
Breast	23.3	52.5	15.7	8.2	.....	.8	695
Leg	11.7	63.4	18.3	5.8	.....	1.0	595
Leg cutlets	3.4	68.3	20.1	7.5	.....	1.0	690
Fore quarter	24.5	54.2	15.1	6.0	.....	.7	535
Hind quarter	20.7	56.2	16.2	6.6	.....	.8	560
Mutton:							
Flank	9.9	39.0	13.8	36.9	.....	.6	1,815
Leg, hind	17.7	51.9	15.4	14.5	.....	.8	900
Shoulder	23.1	46.8	13.7	17.1	.....	.7	975
Fore quarter	21.9	41.6	12.3	24.5	.....	.7	1,265
Hind quarter, without tallow	19.3	43.3	13.0	24.0	.....	.7	1,255
Lamb:							
Breast	19.1	45.5	15.4	19.1	.....	.8	1,090
Leg, hind	13.8	50.3	16.0	19.7	.....	.9	1,120
Pork, fresh:							
Flank	18.0	48.5	15.1	18.6	.....	.7	1,065
Ham	10.3	45.1	14.3	29.7	.....	.8	1,580
Loin chops	19.3	40.8	13.2	26.0	.....	.8	1,340
Shoulder	12.4	44.9	12.0	29.8	.....	.7	1,480
Tenderloin	.....	66.5	18.9	13.0	.....	1.0	900
Pork, salted, cured, and pickled:							
Ham, smoked	12.2	35.8	14.5	33.2	.....	4.2	1,870
Shoulder, smoked	18.9	30.7	12.6	33.0	.....	5.0	1,695
Salt pork	.....	7.9	1.9	86.2	.....	3.9	3,670
Bacon, smoked	8.7	18.4	9.5	59.4	.....	4.5	2,695
Sausage:							
Bologna	3.3	55.2	18.2	19.7	.....	3.8	1,170
Farmer	3.9	22.2	27.9	40.4	.....	7.3	2,220
Frankfort	.....	57.2	19.6	18.6	1.1	3.4	1,170
Soups:							
Celery, cream of	.....	86.6	2.1	2.8	5.0	1.5	250
Beef	.....	92.9	4.4	.4	1.1	1.2	120
Meat stew	.....	84.5	4.6	4.3	5.5	1.1	370
Tomato	.....	90.0	1.8	1.1	5.6	1.5	185
Poultry:							
Chicken, broilers	41.6	43.7	12.8	1.4	.....	.7	295
Fowls	26.9	47.1	13.7	12.3	.....	.7	775
Goose	17.6	38.5	13.4	29.8	.....	.7	1,505
Turkey	22.7	42.4	16.1	18.4	.....	.8	1,075
Fish:							
Cod, dressed	29.9	58.5	11.1	.2	.....	.8	215
Halibut, steaks or sections	17.7	61.9	15.3	4.4	.....	.9	470
Mackerel, whole	44.7	40.4	10.2	4.2	.....	.7	355
Perch, yellow, dressed	35.1	50.7	12.8	.7	.....	.9	265
Shad, whole	50.1	35.2	9.4	4.8	.....	.7	380
Shad, roe	.....	71.2	20.9	3.8	2.6	1.5	600
Fish, salt: Cod	24.9	40.2	19.0	.4	.....	15.5	315

a Condensed from detailed tables in Bulletin No. 28, revised, of the Office of Experiment Stations of this Department.

Average composition of American food products—Continued.

Food materials (as purchased).	Refuse.	Water.	Protein.	Fat.	Carbohydrates.	Ash.	Fuel value per pound.
ANIMAL FOOD—continued.							
	Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Calories.*
Fish, canned:							
Salmon	14.2	56.8	19.5	7.5	.....	2.0	680
Sardines	a 5.0	53.6	23.7	19.1	.....	3.3	950
Shellfish:							
Oysters, "solids"	.....	88.3	6.0	1.3	3.3	1.1	220
Clams	.....	80.8	10.6	1.1	5.3	2.3	340
Crabs	52.4	36.7	7.9	.9	.6	1.5	195
Lobsters	61.7	30.7	5.9	.7	.2	.8	140
Eggs: Hens' eggs	b 11.2	65.5	11.9	9.3	.....	.9	635
Dairy products, etc.:							
Butter	.....	11.0	1.0	85.0	.....	3.0	3,605
Whole milk	.....	87.0	3.3	4.0	5.0	.7	325
Skim milk	.....	90.5	3.4	.3	5.1	.7	170
Buttermilk	.....	91.0	3.0	.5	4.8	.7	165
Condensed milk	.....	26.9	8.8	9.3	54.1	1.9	1,520
Cream	.....	74.0	2.5	18.5	4.5	.5	910
Cheese, Cheddar	.....	27.4	27.7	36.8	4.1	4.0	2,145
Cheese, full cream	.....	34.2	25.9	33.7	2.4	3.8	1,950
VEGETABLE FOOD.							
Flour, meal, etc.:							
Entire-wheat flour	.....	11.4	13.8	1.9	71.9	1.0	1,675
Graham flour	.....	11.3	13.3	2.2	71.4	1.8	1,670
Wheat flour, patent roller process—							
High-grade and medium	.....	12.0	11.4	1.0	75.1	.5	1,650
Low grade	.....	12.0	14.0	1.9	71.2	.9	1,665
Macaroni	.....	78.4	3.0	1.5	15.8	1.3	415
Crushed wheat	.....	10.1	11.1	1.7	75.5	1.6	1,695
Buckwheat flour	.....	13.6	6.4	1.2	77.9	.9	1,690
Corn meal	.....	12.5	9.2	1.9	76.4	1.0	1,655
Oatmeal	.....	7.3	16.1	7.2	67.5	1.9	1,860
Rice	.....	12.3	8.0	.3	79.0	.4	1,630
Tapioca	.....	11.4	.4	.1	88.0	.1	1,650
Starch	.....	.....	.....	.....	99.0	.....	1,675
Bread, pastry, etc.:							
White bread	.....	35.3	9.2	1.3	53.1	1.1	1,215
Brown bread	.....	43.6	5.4	1.8	47.1	2.1	1,050
Graham bread	.....	35.7	8.9	1.8	52.1	1.5	1,210
Whole-wheat bread	.....	38.4	9.7	.9	49.7	1.3	1,140
Rye bread	.....	35.7	9.0	.6	53.2	1.5	1,180
Cake	.....	19.9	6.3	9.0	63.3	1.5	1,675
Cream crackers	.....	6.8	9.7	12.1	69.7	1.7	1,990
Oyster crackers	.....	4.8	11.3	10.5	70.5	2.9	1,965
Soda crackers	.....	5.9	9.8	9.1	73.1	2.1	1,935
Sugars, etc.:							
Molasses	.....	25.1	2.4	.....	69.3	3.2	1,290
Candy	.....	.....	.....	.....	96.0	.....	1,785
Honey c	.....	18.2	.4	.....	81.2	.2	1,520
Sugar, granulated	.....	.....	.....	.....	100.0	.....	1,860
Maple sirup	.....	.....	.....	.....	71.4	.....	1,330
Vegetables: d							
Beans, dried	.....	12.6	22.5	1.8	59.6	3.5	1,605
Beans, Lima, shelled	.....	68.5	7.1	.7	22.0	1.7	570
Beans, string	7.0	83.0	2.1	.3	6.9	.7	180
Beets	20.0	70.0	1.3	.1	7.7	.9	170
Cabbage	15.0	77.7	1.4	.2	4.8	.9	125
Celery	20.0	75.6	.9	.1	2.6	.8	70
Corn, green (sweet), edible portion	.....	75.4	3.1	1.1	19.7	.7	470
Cucumbers	15.0	81.1	.7	.2	2.6	.4	70
Lettuce	15.0	80.5	1.0	.2	2.5	.8	75
Mushrooms	.....	88.1	3.5	.4	6.8	1.2	210
Onions	10.0	78.9	1.4	.3	8.9	.5	205
Parsnips	20.0	66.4	1.3	.4	10.8	1.1	340
Peas (*Pisum sativum*), dried	.....	9.5	24.6	1.0	62.0	2.9	1,655

a Refuse, oil.
b Refuse, shell.
c Contained on an average cane sugar 2.8 and reducing sugar 71.1 per cent. The reducing sugar was composed of about equal amounts of glucose (dextrose) and fruit sugar (levulose).
d Such vegetables as potatoes, squash, beets, etc., have a certain amount of inedible material, skin, seeds, etc. The amount varies with the method of preparing the vegetables, and can not be accurately estimated. The figures given for refuse of vegetables, fruits, etc., are assumed to represent approximately the amount of refuse in these foods as ordinarily prepared.

***Average composition of American food products*—Continued.**

Food materials (as purchased).	Refuse.	Water.	Protein.	Fat.	Carbohydrates.	Ash.	Fuel value per pound.
VEGETABLE FOOD—Continued.							
Vegetables *a*—Continued.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Calories.*
Peas (*Pisum sativum*), shelled	.....	74.6	7.0	0.5	16.9	1.0	465
Cowpeas, dried	.....	13.0	21.4	1.4	60.8	3.4	1,590
Potatoes	20.0	62.6	1.8	.1	14.7	.8	310
Rhubarb	40.0	56.6	.4	.4	2.2	.4	65
Sweet potatoes	20.0	55.2	1.4	.6	21.9	.9	640
Spinach	.....	92.3	2.1	.3	3.2	2.1	110
Squash	50.0	44.2	.7	.2	4.5	.4	105
Tomatoes	.....	94.3	.9	.4	3.9	.5	105
Turnips	30.0	62.7	.9	.1	5.7	.6	135
Vegetables, canned:							
Peas (*Pisum sativum*), green	.....	85.3	3.6	.2	9.8	1.1	255
Corn, green	.....	76.1	2.8	1.2	19.0	.9	455
Tomatoes	.....	94.0	1.2	.2	4.0	.6	105
Fruits, berries, etc., fresh: *b*							
Apples	25.0	63.3	.3	.3	10.8	.3	220
Bananas	35.0	48.9	.8	.4	14.3	.6	300
Grapes	25.0	58.0	1.0	1.2	14.4	.4	325
Lemons	30.0	62.5	.7	.5	5.9	.4	145
Muskmelons	50.0	44.8	.3	.....	4.6	.3	90
Oranges	27.0	63.4	.6	.1	8.5	.4	170
Pears	10.0	76.0	.5	.4	12.7	.4	260
Persimmons, edible portion	.....	66.1	.8	.7	31.5	.9	630
Raspberries	.....	85.8	1.0	.....	12.6	.6	255
Strawberries	5.0	85.9	.9	.6	7.0	.6	175
Watermelons	50.4	37.5	.2	.1	2.7	.1	60
Fruits, dried:							
Apples	.....	26.1	1.6	2.2	66.1	2.0	1,350
Apricots	.....	31.4	.9	.....	17.3	.4	340
Dates	10.0	13.8	1.9	2.5	70.6	1.2	1,450
Figs	.....	18.8	4.3	.8	74.2	2.4	1,475
Nuts:							
Almonds	45.0	2.7	11.5	30.2	9.5	1.1	1,660
Beechnuts	40.8	2.3	13.0	34.0	7.8	2.1	1,880
Brazil nuts	49.6	2.6	8.6	33.7	3.5	2.0	1,655
Butternuts	86.4	.6	3.8	8.3	.5	.4	420
Chestnuts, fresh	16.0	37.8	5.2	4.5	35.4	1.1	945
Chestnuts, dried	24.0	4.5	8.1	5.3	56.4	1.7	1,435
Cocoanuts	46.8	7.2	2.9	25.9	14.3	.9	1,415
Cocoanut, prepared	.....	3.5	5.3	57.4	31.5	1.3	3,125
Filberts	52.1	1.8	7.5	31.3	6.2	1.1	1,575
Hickory nuts	62.2	1.4	5.8	25.5	4.3	.8	1,265
Pecans, polished	58.2	1.4	5.2	33.3	6.2	.7	1,680
Peanuts	24.5	6.9	19.5	39.1	18.5	1.5	1,985
Pinon (*Pinus edulis*)	40.6	2.0	9.7	36.8	10.2	1.7	1,905
Walnuts, California, black	74.1	.6	7.2	14.6	3.0	.5	805
Walnuts, California, soft-shell	56.1	1.0	6.9	25.6	6.8	.6	1,375
Raisins	10.0	13.1	2.3	3.0	66.5	3.1	1,445
Miscellaneous:							
Chocolate	.....	5.9	12.9	48.7	30.3	2.2	2,860
Cocoa, powdered	.....	4.6	21.6	28.9	37.7	7.2	2,380
Cereal coffee, infusion (1 part boiled in 20 parts water) *d*	.....	98.2	.2	.....	1.4	.2	30

a Such vegetables as potatoes, squash, beets, etc., have a certain amount of inedible material, skin, seeds, etc. The amount varies with the method of preparing the vegetables, and can not be accurately estimated. The figures given for refuse of vegetables, fruits, etc., are assumed to represent approximately the amount of refuse in these foods as ordinarily prepared.

b Fruits contain a certain proportion of inedible materials, as skin, seeds, etc., which are properly classed as refuse. In some fruits, as oranges and prunes, the amount rejected in eating is practically the same as refuse. In others, as apples and pears, more or less of the edible material is ordinarily rejected with the skin and seeds and other inedible portions. The edible material which is thus thrown away, and should properly be classed with the waste, is here classed with the refuse. The figures for refuse here given represent, as nearly as can be ascertained, the quantities ordinarily rejected.

c Milk and shell.

d The average of five analyses of cereal coffee grain is: Water 6.2, protein 13.3, fat 3.4, carbohydrates 72.6, and ash 4.5 per cent. Only a portion of the nutrients, however, enter into the infusion. The average in the table represents the available nutrients in the beverage. Infusions of genuine coffee and of tea like the above contain practically no nutrients.

DIETARY STANDARDS.

Dietary studies have been made in considerable numbers in different countries. The results of such studies and experiments to

determine the amount of food required by men engaged in different occupations have resulted in the adoption of dietary standards. Some of these follow:

Standards for Daily Dietaries.

Character of work to be performed.	NUTRIENTS. *Protein.*	*Fat.*	*Carbohydrates.*	*Fuel value.*
European:	*Pound.*	*Pound.*	*Pounds.*	*Calories.*
Man at moderate work.....	0.26	0.12	1.10	3,055
Man at hard work.....	.32	.22	.99	3,370
American:				
Man without muscular work.	.20	...	...	3,000
Man with light muscular work	.22	...	...	3,000
Man with moderate muscular work.....	.28	...	...	3,500
Man with hard muscular work	.39	...	...	4,500

The table of composition of food materials shows the amount of water, protein, fat, carbohydrates, and ash content and the total fuel value per pound for each kind of food named. The protein, fat and carbohydrates all furnish energy. In addition to furnishing energy, protein forms tissue. Since protein and energy are the essential features of food, dietary standards may be expressed in their simplest form in terms of protein and energy alone.

Observation has shown that as a rule a woman requires less food than a man, and the amount required by children is still less, varying with the age. It is customary to assign certain factors which shall represent the amount of nutrients required by children of different ages and by women as compared with adult man. The various factors which have been adopted are as follows:

Factors Used in Calculating Meals Consumed in Dietary Studies.

One meal of woman equivalent to 0.8 meal of man at moderate muscular labor.

One meal of boy 14 to 16 years of age, inclusive, equivalent to 0.8 meal of man.

One meal of girl 14 to 16 years of age, inclusive, equivalent to 0.7 meal of man.

One meal of child 10 to 13 years of age, inclusive, equivalent to 0.6 meal of man.

One meal of child 6 to 9 years of age, inclusive, equivalent to 0.5 meal of man.

One meal of child 2 to 5 years of age, inclusive, equivalent to 0.4 meal of man.

One meal of child under 2 years of age, equivalent to 0.3 meal of man.

These factors are based in part upon experimental data and in part upon arbitrary assumptions. They are subject to revision when experimental evidence shall warrant more definite conclusions.

The plan followed in making dietary studies is, briefly, as follows: Exact account is taken of all the food materials (1) at the beginning of the study, (2) purchased during the study, and (3) remaining at the end. The difference between the third and the sum of the first and second is taken as representing the amount used. From the figures thus obtained the amount of the different food materials and the amount of the different nutrients furnished by them is calculated. Deducting from this the weights of the nutrients found in the kitchen and table refuse, the amounts actually consumed are obtained. Account is also taken of the meals eaten by different members of the family or groups studied and by visitors, if there are any. From the total food eaten by all the persons during the entire period, the amount eaten per man per day may be calculated. In making these calculations, due account is taken of the fact that, as stated above, women and children eat less than men in performing the same amount of work.

METHOD OF CALCULATING DIETARIES.

The following may be taken as an illustration of the way in which the table of composition of food products and the dietary standards may be practically applied. Suppose the family consists of four adults, and that there are on hand or may be readily purchased the following food materials: Oatmeal, milk, sugar, eggs, lamb chops, roast beef, potatoes, sweet potatoes, rice, bread, cake, bananas, tea, and coffee. From these materials menus for three meals might be arranged as follows:

Breakfast.—Oatmeal, milk, sugar, lamb chops, bread, butter, and coffee.

Dinner.—Roast beef, potatoes (Irish), sweet potatoes, rice pudding, and tea.

Supper.—Bread, butter, cake and bananas.

The amounts required of the several articles of food may be

readily approximated by any person experienced in marketing or preparing food for a family. Thus, it may be assumed that four adults would consume for breakfast 1 1-2 pounds lamb chops, one-half pound oatmeal, one-half pound bread, 6 ounces milk, 2 ounces sugar, and 2 ounces butter. From the table of composition of food materials the nutritive ingredients which these foods furnish may be easily calculated. Thus, if oatmeal contains 16.1 per cent. of protein and furnishes 1,860 calories per pound, one-half pound would contain 0.081 pound protein (0.5 × 0.161 = 0.081 pound) and yield 930 calories (0.5 × 1,860 = 930), and if lamb chops contain 16 per cent. protein and furnish 1,130 calories per pound, 1 1-2 pounds of lamb chops would furnish 0.24 pound protein (1.5 pounds × 0.16 = 0.24 pound) and 1,195 calories (1.5 pounds × 1,130 = 1,695 calories). The others may be calculated in the same way.

The American dietary standard for a man at moderate muscular work calls for 0.28 pound protein and 3,500 calories. It will be seen that the menu suggested above is insufficient; that is, more food must be supplied. For instance, cheese might be added for dinner, and pork and beans and milk for supper. The amounts of protein and energy which a sufficient quantity of these articles for four persons would supply are shown in the following table:

Food Added to Bring the Day's Menu up to the Dietary Standard.

Food materials.	*Weights.*		*Protein.*	*Fuel. value.*
	Pounds.	*Ounces.*	*Pound.*	*Calories.*
Cheese	..	4	0.069	536
Beans	..	10	.141	0.005
Pork	..	4	.005	918
Milk	2	..	.066	650
Total am't added to menu..	..	..	.281	3,109

These additions would make the total protein 1.190 pounds and the total fuel value 14,377 calories for four persons, or for one person, 0.298 pound protein and 3,599 calories. (For the sake of simplifying calculation, no distinction is made between the amounts required by men and women.) These values are approximately the amounts required by the dietary standard.

The assumed quantities of food materials which the four persons would consume in a day, and the calculated protein content and fuel value, would be as follows:

Menu for Family of Four Adults for One Day.

Food materials.	*Weights.*		*Protein.*	*Fuel value.*
BREAKFAST—	*Pounds.*	*Ounces.*	*Pound.*	*Calories.*
Oatmeal	..	8	0.081	930
Milk	..	6	.012	122
Sugar	..	2	..	232
Lamb chops (from leg)	1	8	.240	1,695
Bread	..	8	.046	608
Butter	..	2	.001	451
Coffee *a*	..	..	.010	417
Total	..	..	.390	4,455
DINNER—				
Roast beef (chuck)	1	12	.277	1,435
Potatoes	..	12	.014	233
Sweet potatoes	..	12	.011	480
Bread	..	6	.035	456
Butter	..	2	.001	451
Rice	..	4	.020	408
Eggs	..	4	.030	160
Milk	..	6	.012	122
Sugar	..	2	...	232
Tea	..	..	.010	410
Total	..	..	.410	4,387
SUPPER—				
Bread	..	12	.070	912
Butter	..	2	.001	451
Bananas	..	12	.006	225
Cake	..	8	.032	838
Total	..	..	.109	2,426
Total for 3 meals	..	..	.909	11,268
Average for 1 person	..	..	.227	2,817

a Coffee and tea in themselves have little or no nutritive value. In the menu, allowance is made for the milk or cream and the sugar that would ordinarily be added.

Following the above method, the value of any menu chosen may be easily calculated. It should be borne in mind that approximate rather than absolute agreement with the dietary standard is sought. It is not the purpose to furnish a prescription for definite amounts of food materials, but rather to supply the means of judging whether the food habits of families accord in general with what research has shown to be most desirable from a physiological standpoint. If economy is necessary, a study of the tables will show that it is possible to devise menus which will furnish the requisite amounts of nutrients and energy at comparatively low cost.

DIGESTIBILITY.

The value of a food is determined not alone by its composition, but also by its digestibility; that is, by the amount of it which the body can retain and utilize as it passes through the digestive tract. The term digestibility, as frequently employed, particularly in popular articles, has several other significations. Thus, to many persons it conveys the idea that a particular food "agrees" with the user—i. e., that it does not cause distress when eaten. The term is also very commonly understood to mean the ease or rapidity of digestion, and one food is often said to be more digestible than another because it is digested in less time. However, the term digestibility is most commonly understood in scientific treatises on the subject to mean thoroughness of digestion. The digestibility of any food may be learned most satisfactorily by experiments with man, although experiments are also made by methods of artificial digestion. In the experiments with man, both food and feces are analyzed. Deducting the amounts of the several nutrients in the feces from the total amounts of each nutrient consumed shows how much of each was digested. The results are usually expressed in percentages and spoken of as coefficients of digestibility. By the following figures, the digestible nutrients furnished by any food may be readily calculated. Thus, as shown by the table on composition above, sirloin steak contains 16.5 per cent. protein. One and one-half pounds would therefore contain 0.2475 pound protein, or, in round numbers, 0.25 pound ($1.5 \times 165 = 0.2475$). From a large number of experiments with man it has been calculated that on an average the different groups into which foods may for convenience be divided have the following coefficients of digestibility:

Coefficients of Digestibility of Different Groups of Food.

Foods.	*Protein.* Per cent.	*Fat.* Per cent.	*Carbo-hydrates.* Per cent.	*Mineral matters.* Per cent.
Animal foods.....	98	97	100	75
Cereals and sugars.....	85	90	98	75
Vegetables and fruits.....	80	90	95	75

As shown by the coefficients of digestibility quoted above, 98 per cent. of the protein of animal food is digestible. Therefore, 1.5 pounds sirloin steak would furnish 0.245 pound digestible protein ($0.25 \times 0.98 = 0.245$). The digestibility of the several nutrients in a given quantity of any food may be calculated in a similar way.

Recommended for publication.

A. C. TRUE,
Director.

Publication authorized:

JAMES WILSON,
Secretary of Agriculture.

WASHINGTON, D. C., April 5, 1901.

MEAT RATION IN THE TROPICS.*

By P. R. EGAN, Surgeon U. S. Army.

Following the late Spanish War, American soldiers were scattered from the Arctic Circle to the Equator. Speculation as to their requirements under these new surroundings soon became rife. The necessary clothing alterations were sufficiently apparent, but the requisite food is still a matter of discussion. In the first days of the occupation of Puerto Rico an officer of the line wrote home that his principal food consisted of crackers and milk, and that he was in excellent health because he avoided all heating diet.

Physiologists had for a long time observed that there was a rise of body temperature of nearly one degree in the tropics; that the pulse rate was lowered; that respiration and blood pressure were

*Read before the Lyceum, Fort Douglas, Utah, January 25, 1901.

diminished; and that there was a marked languor and tendency to depression. Proteids and fats increased heat production, and should, it was stated, be abandoned or used very sparingly. They also proceeded to analyze the diet consumed by the negro in the Antilles, the Hindoo in India, and the Malay in the Eastern Archipelago, and to point out a great diminution of the proteids and fats in his dietary. But they also discovered that the carbohydrates were diminished to an equal degree; or, in other words, that their diets were those of chronic starvation, a condition that exists to some extent in most tropical countries where the rate of increase of population is so great that the country is unable to raise sufficient produce to feed them, and where, as in India, famines are now beginning to be regarded as inevitable. Overlooking these facts, they declared that there was need of more sugar and tropical vegetables, and less meat and fat, to reduce our dietary to their standard; that is, to the standard of those who are unable to procure nourishing food. But coming nearer home, these same physiologists would not for a moment declare that, because the Crofter lives on oatcake, and the Cottier on potatoes, that the diet suitable to Scotland was oatmeal and to Ireland potatoes. Yet, guided by their theories, some, like the line officer, lived principally on crackers and milk, and others believed like Major Louis Livingston Seaman, surgeon to the First Volunteer Engineers, who is reported as declaring before the Board of Officers on the Tropical Ration that what should have been a delightful outing for his regiment was turned into a tragedy because of the heating foods his troops had to eat. When they landed in Puerto Rico not a man was on sick report. In less than three months, nearly one-third of the regiment was on the sick list, and the rest were scarcely able to carry their personal belongings when they reached New York. Dr. Seaman said that all had suffered from bowel irritation, and that when they needed delicate food they had to use that which had inflamed the intestinal tract and had produced symptoms like a catarrhal condition, making the patient peculiarly subject to attacks of typhoid and other fevers. He also said the food used was diet food and not the regular rations. However, few of the persons who have had extended experience of the tropics agree to the so-called heating effects of the proteids; nor does the diet of the natives who can afford other than starvation fare tend to support this theory. The late Governor, General Henry, of Puerto Rico, wrote in December, 1899: "The better class live and dress like

ourselves. The food of this class is, for the early meal, coffee and bread for breakfast; at noon, coffee, vegetables, eggs, meat and dulces, or sweets. The night meal is about the same. They are great meat eaters, it being cooked in various ways."

In January of the same year Colonel O'Reilly, chief surgeon, Division of Cuba, who had been sent to Jamaica to investigate how Great Britain cares for her soldiers in the tropics, reported: "No improvement on the present ration of the United States can be suggested. If it errs at all, it errs on the side of too great liberality." In December, 1899, I wrote the following letter to the "Boston Medical and Surgical Journal": "As a supplement to the article of my scientific friend, Colonel Smart, on the 'Army Ration,' let me add a few practical observations gathered in Puerto Rico. Duty has taken me, at one time or another, since the first days of the American invasion, into almost every town from Ysabella on the northwest coast to Humacao on the east coast, and then up the military road to this capital. In the districts of Guayama and Southern Humacao it was part of my business to investigate the cause of deaths among the natives. Everywhere I found the main cause assigned to be anemia and phthisis. Everywhere I went I was struck by this ever-prevalent anemia. The pale, yellowish, waxy skin, the bloodless lips, and the swollen, puffy features, formed a picture never seen by me outside of tropical Puerto Rico. Yet I soon found that these people had been living on rice, beans, maize, dried codfish and fruits. Meat very rarely entered into their diet. They and their fathers before them had lived exclusively on the diet urged by the public press as suitable for tropical climates, and the result filled the hospitals with such ghastly cases of anemia that no one who has once seen the picture can ever forget the impression. On the other hand, I soon discovered that the people who lived in the towns and could afford it ate two hearty meals daily. These people, I believe, use more meat than we use in American cities, and there is no doubt in my mind that I have used more meat and felt more need of it since I have been here than ever in the same time in the United States. Yet I am one of the few who did not have to go home for ill health, while the natives that eat in the hotels with me, and as freely as I do, are perfectly healthy individuals, and show not the least trace of anemia. Only a few days since, a native informed me, with much gusto, that one of the best things that Puerto Rico afforded was *chuleta de cerdo* (pork chops), surely one of the most unsuitable articles of diet for a tropical climate, as our physiological friends will tell us, and

yet the absence of which, in my opinion, made the native anemic to a noticeable degree. These observations are so common in this climate, and have been so forcibly impressed on me, that I feel more and more the wisdom of going very, very slowly in urging alterations in the ration."

Major Stephenson, Surgeon United States Army, also made the following statement: "My personal experience of a year in Tampa, Puerto Rico and Santiago was that I craved and ate as much meat of all kinds relatively to all food eaten in cooler climates. I believe that meat consumption among the natives of hot climates is limited to their purses, not to their tastes. In Cuba and Puerto Rico I found the noon and evening meals in private houses and restaurants prodigal of meats of all kinds."

The absurdity of arguing from theory and not from experience was forcibly impressed on me as I read, on a balcony in San Juan, the essay that gained the hundred-dollar prize given by Major Louis Livingston Seaman for the ideal tropical ration. As I reached the part that discussed the "distaste for fats in considerable quantities, so early acquired in the tropics," I was aroused by the cry of the "Char-r-rone" vender. For more than a month I had noticed that same cry every afternoon. I had tried faithfully during that time to detect what he was calling out, but had as signally failed, until, one evening, I was fortunate enough to have an Englishman, educated in Spain, along with me when he made his rounds. Then I learned that "Char-r-rone" was the Puerto Rican abbreviation for "chicharrones," and that this was Spanish for pork fried crisp with the skin on it. For twenty centavos I obtained a piece about a foot square. I found that while the outside was crisp, the interior of my piece, an inch in thickness, was simply cold fat pork with a very little lean through it. The man sold it as a *bonne bouche* through the streets every afternoon. A couple of mouthfuls was all I desired to test, but the rapidity and relish with which my four little Puerto Rican girl friends devoured it gave me a striking example of the "distaste for fats in any quantity so early acquired in the tropics," and of the value to be attached to theories derived from analysis of "jibaro" dietary, as to what constitutes a suitable food for the tropics. On the other hand, it is now being claimed by some writers that the depression and languor of the tropics call for increased food and vinous stimulants, and this idea seems to be warranted by the large amount of meat, and of claret, or water with a dash of rum, used twice daily by the better classes of the population.

The board before which Major Seaman made his plea has recently, according to the public press, reported to the Secretary of War that "The recommendation that the fresh meat ration be reduced in quantity was so opposed to all the teachings of experience, both in our country and in Cuba and Puerto Rico, that the board was unable to accept the recommendation as conclusive without further investigation. Two members of the board have served in Cuba, and the third in Puerto Rico, and their personal experience has been that as much meat has been desired and eaten as in the United States, and with no deleterious effect on the health of the men. The natives of these countries are also large meat eaters when they are able to secure it, and the meat eaters are noticeably stronger and healthier looking than the poorer classes who, from necessity, are mainly vegetarians. The board also interviewed a number of officers and other persons that had been in the Philippines, and taking all sources of information together, the board is of the opinion that it would be a mistake to make any fixed reduction in the meat ration." The criticism of General Henry in the above quoted article that "The objection to the meat (of Puerto Rico) for an American is, that having no place to keep beef after being killed, it has to be put in the pot in a hot, quivering condition, and I believe this made many an American soldier ill," is in part well applied. Puerto Rican beef cannot be cooked American fashion and be other than tough and unpalatable, as it is killed about 3 o'clock in the morning and eaten by 11 or 12 o'clock the same day. I had so fully recognized this fact that for more than a year before leaving the island I refused all "bifstek" or "rostbif" as presented by the seductive native. Only Swift or Armour refrigerated beef can in Puerto Rico be prepared American fashion. Native beef, however, prepared by native cooking, is tender and palatable, devoid of this objection, and is habitually consumed with only the best results. In fact, when they ask us to replace the meat ration by vegetables, we should not forget the Spanish motto that says: *"Bellotas y tostones hacen malos trabajadores.*—From "Boston Medical and Surgical Journal."

RECENT ADVANCES IN THE PHYSICS OF WATER.

By GEORGE FLOWERS STRADLING, PH.D., Member of the Franklin Institute.

From "The Journal of the Franklin Institute," October, 1901.

For a long time it has been known that water, the most common of all liquids, has physical properties which vary widely from those of most other liquids. The large quantity of heat required to melt a gram of ice, the still larger quantity required to convert a gram of water into vapor at the same temperature, and the existence of a temperature of maximum density between the melting and the freezing points, mark water as departing from the usual rules of liquid comportment. Already the list of the anomalies presented by water is long, and yet it is no uncommon occurrence to have it increased. For instance, Hauser, in the July number of "Drude's Annalen" for 1901, shows that at 32 degrees Centigrade the viscosity of water is not changed by a pressure of 400 atmospheres, while at other temperatures it is changed.

Within the last decade, serious attempts have been made to furnish an explanation of the irregularities of water. The idea that water molecules are not H_2O simply but are aggregates of this group is advanced by Raoult* as a result of his experiments upon the molecular lowering of the freezing point of solutions, and probably expressions of this view would be found long before. When, in 1891, Roentgen attacked the problem, he used this suggestion and succeeded in furnishing a qualitative explanation.†

He regards water as composed of molecules of two kinds, which he designates ice molecules and molecules of the second kind. Ordinary water is considered to be a saturated solution of ice molecules in a mass of molecules of the second kind. By the addition of heat, ice molecules are converted into those of the second kind. This is accompanied by a diminution of volume, just as when ice melts.

The Maximum Density of Water.—At 4 degrees Centigrade, water is at its maximum density. The addition of heat to a mixture of the two kinds of molecules will cause

*Raoult, "Ann. chim. et phys.," Series 6, Vol. II, p. 66, 1884.
†Roentgen, "Wied. Ann.," XLV, p. 91. "Uber die Constitution des flüssigen Wassers."

(1) A diminution of volume, due to the change of ice molecules into molecules of the second kind.

(2) An increase of volume, due to the expansion of the mass of molecules of the second kind.

The observed change in the volume of water is the difference of these two defects. When heat is applied to water at 0°, a relatively large number of ice molecules are changed into the other kind and the diminution of volume amounts to more than the increase. As the temperature rises, the number of ice molecules diminishes, hence fewer are changed into the second kind, and the difference between the diminution and increase grows less. At 4 degrees the two effects just balance each other, while above this temperature the increase of volume is the greater.

Roentgen gives this explanation, but does not claim to be the originator of it. Indeed, H. M. Vernon,* in the same year, gave practically the same explanation.

Pressure—Volume—Temperature Relations of Water.—As the temperature of simple liquids rises, their compressibility increases, but the compressibility of water grows less with rising temperature, and, according to the results of S. Pagliani and G. Vicentini,† reaches a minimum value at 63 degrees Centigrade.

To explain this, Roentgen further assumes that an increase of pressure upon a mass of water kept at constant temperature results in the change of some of the ice molecules into molecules of the second kind, and that the number so changing is greater as the total number of ice molecules present is greater. This transformation causes a diminution of volume which is greater for a given increase of pressure at low temperatures, because then the water is richer in ice molecules. When, therefore, pressure is exerted upon a mass of water, the resulting change of volume is the sum of

(1) A decrease of volume, due to the transforming of ice molecules into those of the second kind, and

(2) A decrease, due to the compression of the mass of molecules of the second kind.

The first of these decreases will grow smaller as the temperature rises, because with rising temperature the number of ice molecules becomes smaller. On the other hand, the second will probably become greater as the temperature goes up. At least, simple liquids act thus. From the opposite effects produced upon the two decre-

*H. M. Vernon, "Phil. Mag.," Series 5, Vol. XXXI, p. 387, 1891. "On the Maximum Density of Water."

†S. Pagliani und G. Vicentini. "Beiblätter," VIII, p. 794. "Ueber die Compressibilität der Flüssigkeiten und insbesondere des Wassers."

ments by a rise of temperature, it is seen that their sum, which is the actually observed compressibility of water, might at some temperature have a minimum value.

The effect of pressure upon the coefficient of thermal expansion of ether, carbon disulphide and alcohol is to lower it; but for water it has been found that the mean coefficient, up to 50 degrees at least, is increased, even when the pressures amount to 2500-3000 atmospheres. To find an explanation for this anomalous effect, consider how an increase of pressure will act on both of the volume changes mentioned under the heading "The maximum density of water." The first, the diminution of volume, will be made less by an increase of pressure, because thereby the ice molecules are converted into the other kind, so that there remains fewer of them to be changed by heat. Roentgen had no data by which to determine how pressure would affect the second, the increase of the volume of the mass of molecules of the second kind. He suggests that perhaps there would be but little effect upon the coefficient of expansion. Let us now compare the thermal expansion of a mass of water under a pressure of one atmosphere with the expansion under a higher pressure, the rise of temperature being, for example, from 5 degrees to 10 degrees Centigrade in both cases. The observed expansion under both pressures is the expansion of the aggregate of molecules of the second kind minus the decrease in volume due to the change by heat of some ice molecules into the others. Under the higher pressure the minuend is larger because there are more molecules of the second kind in the water, and the subtrahend is less because the number of ice molecules is smaller. The remainder, the observed thermal expansion, is therefore larger for the higher than for the lower pressure.

Amagat finds that at high pressures water comports itself as an ordinary liquid. This finds its explanation in the disappearance of ice molecules. His results likewise show that the effect of pressure upon the coefficient of thermal expansion is most marked when the temperature and the pressure are low. This is understood when it is recalled that the number of ice molecules is greater at low pressure and at low temperature.

Lowering of the Temperature of Maximum Density by Pressure.—The temperature of maximum density moves downward from 4 degrees Centigrade as the pressure upon the water is made greater. According to the view already advanced, at 4 degrees Centigrade, and under atmospheric pressure, the effect upon the volume of a mass of water caused by a small increase of tempera-

ture is zero, because there the two opposite volume changes just balance each other. An increase of pressure lessens the number of ice molecules and consequently gives to the expansion of the mass of molecules of the second kind the preponderance. Under this increased pressure, then, the balancing of the two effects no longer occurs at 4°, but at some lower temperature, where the water is richer in ice molecules.

By pressure water can be cooled below 0°C. without freezing, because the pressure prevents the formation of ice molecules.

Viscosity of Water.—Water under pressures of several hundred atmospheres is less viscous than at normal pressure, provided the temperature does not exceed 32°C. Other liquids which have been investigated grow more viscous with an increase of pressure.

The viscosity of water is generally made greater by dissolving other substances in it, and the larger the quantity of the solute the greater, in general, is the viscosity. Its viscosity would, accordingly, be expected to increase with the proportion of ice molecules. An increase of pressure by reducing their number would reduce at the same time the viscosity. An increase of temperature lowers the viscosity for the same reason, and very likely also by decreasing the viscosity of the mass of molecules of the second kind.

From the investigations of R. Cohen,* it appears that the decrease of viscosity produced by a given increment of pressure is greater the lower the temperature. For instance, at 10°C., the effect of an increase of pressure of 600 atmospheres is about six times as great as at 23°C. This is to be attributed to the greater effect at 10° of the pressure in reducing the number of ice molecules. Moreover, when the temperature is constant, he finds that a given increase of pressure produces a greater effect upon the viscosity when the pressure already exerted is small than when it is larger. As an illustration, when the temperature is 15°, an increase of pressure from 100 to 300 atmospheres produces a larger decrease in the viscosity than an increase from 300 to 600 atmospheres. The reason of this is to be found in the larger proportion of ice molecules present at low pressures, and the consequent greater reduction in their number produced by the added pressure.

These results obtained by Cohen are of especial interest, since they form the fulfilment of a prediction made by Roentgen "that the viscosity of water at high pressures will be less reduced by a given increase of pressure than at low pressures" and "that the

*R. Cohen. "Wied Ann.," XLV, p. 666, 1891. "Einfluss des Druckes auf die Viscosität von Flüssigkeiten."

effect referred to will for equal pressures be found to be the larger the lower the temperature of the water is."

Following the road marked out by Roentgen, a number of investigators have succeeded in finding the explanation of some of the irregularities of water which he did not discuss. Hugo Witt,* of Stockholm, has applied the theory of ice molecules to several phenomena of aqueous solutions.

From the equation of equilibrium between the two kinds of water molecules in an aqueous solution, he infers that the presence of a solute has the effect of causing some of the ice molecules to change into those of the second kind. This at once explains why the volume of an aqueous solution is generally less than the sum of the volumes of the water and of the dissolved substance. The contraction is the result of the change of molecules of greater specific volume into those of less.

We have seen that an increase of pressure lowers the temperature of maximum density of water. Now both pressure and the presence of a substance dissolved in water have the effect of reducing the number of ice molecules, and hence it is seen why the temperature of maximum density of an aqueous solution is below 4° C.

Witt explains the high specific heat of water as due to the heat required to change the ice molecules into those of the second kind. Aqueous solutions nearly always have a lower specific heat than water. Even after making allowance for the solute, whose specific heat is, of course, less than that of water, it is found that the water in the solution seems to have a less specific heat than before the substance was dissolved in it. Witt attributes this to the solution's having fewer ice molecules than water, so that a rise of temperature of 1° will be followed by the transformation of fewer ice molecules and will therefore require a smaller quantity of heat. He finds in the heat requisite to change the ice molecules into the other kind a reason why the solution of substances in water is usually accompanied by a lowering of temperature.

When a solid is dissolved in a liquid, there is a decrease in the vapor tension of the liquid. Raoult has shown how to calculate this decrease. Now, when water is the solvent, Witt found that, even after allowing for the dissociating power of water, the observed lowering of the vapor tension is more than that calculated by Raoult's formula. He gives this explanation: There is reason

*Hugo Witt, "Ofversigt af Kongl. Vetenskaps-Akademiens Förhandlingar," 1900, No. 1, p. 63. "Ueber die Constitution des Wassers."

to believe that the vapor tension of the ice molecules is greater than that of the others. The observed vapor tension of water probably lies between the two values. When a salt is dissolved in water, by its presence it occasions a lowering of the vapor tension; but in addition to this it causes some ice molecules to change into the second kind, and thus the vapor tension is still further lowered. This last effect is not included in the formula of Raoult.

J. J. van Laar, of Utrecht,* in a mathematical paper, reaches the conclusion that water is made up of $(H_2O)_2$ groups which dissociate with rising temperature. He explains the occurrence of a temperature of maximum density for water very much as Roentgen does. The contraction of volume resulting from the mixture of alcohol and water he accounts for thus: Both have complex molecular groups, formed by association of the molecules represented by the respective chemical formulas, and in both cases change from the complex to the simple form attended by a shrinking of volume. When the two liquids are mixed, both lose in complex molecules and gain in simple ones. Hence the volume decreases. He calculates that the change of 18 g. H_2O into $(H_2O)_2$ causes a lessening of the volume by 8.4 cm^3.

In the experiments by Cohen referred to above it is shown that aqueous solutions of NaCl, which are not concentrated, suffer no change in viscosity by the application of a pressure of 600 atmospheres, at a certain temperature for each strength of solution. Below that temperature the viscosity is lessened; above it is increased. Now, the behavior of water is the same† except that the temperature of no effect is higher. We can find an explanation of this downward displacement of the temperature by recalling that, in accordance with the ideas of Witt and van Laar, the number of ice molecules in water at a certain temperature is the same as the number in a solution of salt in water at a lower temperature.

Within the past year a paper by Sutherland has appeared, in which a vigorous and successful attempt is made to furnish a quantitative explanation of the anomalies of water. The author aims to show that steam consists of H_2O, ice of $(H_2O)_3$, and water of a mixture of $(H_2O)_3$ and of $(H_2O)_2$. He calls H_2O hydrol, $(H_2O)_2$ dihydrol, and $(H_2O)_2$ trihydrol. According to this nomenclature Roentgen's ice molecules are trihydrol and his

*J. J. van Laar, "Zeitschrift für physikalische Chemie," XXXI, p. 1. "Ueber die theilweise Association der Flüssigkeiten."

†L. Hauser, "Drude's Annalen.," V, p. 597, 1901. "Ueber den Einfluss des Druckes auf die Viscosität des Wassers."

‡Sutherland, "Phil. Mag.," Series 5, Vol. L, p. 460, 1900. "The Molecular Constitution of water."

molecules of the second kind dihydrol. The chief results of the paper in the calculation of the physical constants of dihydrol and of trihydrol are given in the following table:

	Density, ρ_0, at 0° C.	$\rho_0 = \rho_t(1 - kt.)$ Temp. Coeff. k.	Compressibility per Atmosphere at 0°.	Surface Tension at 0° in Dynes.
Dihydrol..	1.08942	.0009	.000016	78.3
Trihydrol.	.88	.0002	.000010 (?)	73.32

	Critical Temperature.	Specific Heat at 0°.	Latent Heat of Fusion.	Latent Heat of Evaporation.	Viscosity at 0°.
Dihydrol..	368° C.	.8	.....	257 cal.	.0080
Trihydrol.	538° C.	.6	16 calories.	250 cal. approx.	.0381

The method of determining the density of one of the ingredients of water will now be given to serve as an example of Sutherland's manner of procedure. A curve is plotted in which the ordinates are the densities of water and the abscissas the corresponding temperatures. The curve has its maximum ordinate of 4° and then sinks toward the axis of X, appearing to approach a straight line asymptotically. It seems reasonable to take this straight line as giving the density—temperature relations of one of the ingredients of water. Following the line back until it meets the axis of Y, the density at 0° is read off as 1.083. From considerations based on surface tension it is later shown that this ingredient is dihydrol.

Mendeléeff has calculated an equation giving the density of water as a function of the temperature. Sutherland throws this equation into a form in which the density is the sum of five terms. By regarding water at any temperature as a mixture of water having the composition which it possesses at 4° and of additional dihydrol, and, further, by assuming that both of these ingredients expand with heat in a similar and simple manner, he obtains another expression for the density of water at any temperature, which also has five terms, similar to those of the transformed Mendeléef formula. From comparison of like terms of the two formulas, it follows that the density of dihydrol at 0° is 1.08942, which agrees well with the value 1,083 found from the curve. It will not escape notice how much this result rests upon assumptions.

The following table shows the parts by weight of trihydrol in water at different temperatures under pressures of 1 and 150 atmospheres respectively.

t	0°	20°	40°	60°	80°	100°	120°	140°	198°
At 1 atmo.....	.875	.321	.284	.255	.234	.217	.208	.191	.165
At 150 "	.351	.300	.264	.237	.217	.203	....	....	....

It is calculated that at 2,300 atmospheres pressure there would be no trihydrol in water at 0°.

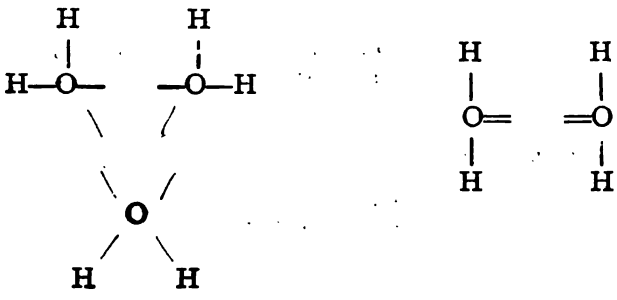
By Eötvös and by Ramsay and Shields it has been proved that for all normal liquids the temperature rate of change of a certain function of the surface tension, molecular weight and density of the liquid, is the same and remains nearly constant almost up to the critical temperature. At temperatures below 40° water has this same constant, provided the density and molecular weight of trihydrol, and not those of water as ordinarily understood, are taken. From 60° upward the same constant is approached if the density and molecular weight of dihydrol are used. Therefore up to 40° the surface layer of water consists of trihydrol alone, and beyond this dihydrol forms in greater and greater quantity with ascending temperature. The reason why the surface film differs in composition from the body of the water is that in the film tension manifests itself, and, if pressure converts trihydrol into dihydrol, then tension should produce the opposite change. Above 60°, however, the surface tension is so far reduced as to permit some dihydrol to form.

Sutherland says: "The solubility of substances in trihydrol may be different from that in water." In connection with this the experiments of Jan von Zawidski* are of interest. He found that foam from aqueous solutions of acetic and of hydrochloric acids containing also some saponin was slightly richer in the acids than the body of the liquid, and that the difference of composition showed itself to a very marked degree in saponin solution by itself.

Sutherland regards the heat of fusion of ice as including the heat required to dissociate some trihydrol into dihydrol. This also holds for the specific heat of water. The latent heat of vaporization likewise includes the heat of dissociation of dihydrol into hydrol. It is calculated that 189 small calories are needed to change 1 gram of dihydrol into hydrol at 100°, and 177 to change 1 gram trihydrol into dihydrol at 0°.

*Jan von Zawidski. "Zeit. fur phys. Chem.," XXXV, p. 77. "Zur Kenntniss der Zusammensetzung der Oberflächenschichten wässeriger Lösungen."

Sutherland suggests these graphic formulæ for trihydrol and dihydrol in which o has valency of 4:



The hexagonal form of ice crystals seems to be the most probable grouping to be expected of molecules in which the equilateral triangle marked out by the three oxygen atoms is the chief feature.

The problem confronting Sutherland was this: Given a substance, whose behavior, especially as a liquid, is anomalous in a number of respects, to determine what must be the respective quantities, rates of change and physical constants of two simple and normal substances, by whose mixture the comportment of water shall be reproduced. Of necessity he often makes appeal to analogy with ordinary substances, for it is one of the conditions of the problem that the solution shall be in terms of such substances. Hypothesis often confronts the reader where he could wish for something firmer, yet the longer he reads the paper the surer he becomes that at last a scientific and quantitative explanation of the comportment of water exists.

G. Tamman* has found that in addition to ordinary ice there are two other varieties, II and III. They differ from the common kind in these respects:

(1) Their melting points are raised by the application of pressure, whereas the opposite is true of ordinary ice.

(2) Their density is greater than that of water. This accounts for the effect of pressure upon their melting points.

(3) They are formed only under special conditions of temperature and pressure. Common ice is cooled below -22° C. and the pressure raised to at least 2,400 kilograms per cm.^{2} Now if the temperature is further lowered until it is from —30° to —60° C., ice III forms; if it is lowered to —80° C., ice II forms.

*G. Tamman, "Drude's Ann.," II, p. 1. "Ueber die Grenzen des festen Zustandes," IV.

When ordinary ice changes into ice II the following diminutions of volume per gram occur:

—73°	.171 cm.³
—55°	.180
—34°	.193

The heat of transformation of common ice into ice II or ice III is positive or negative or zero, according to the temperature. The lowest temperature at which Tamman observed water and ice to exist together was —22.4° C., the pressure being 2,230 kilograms per cm.² He gives the following table of the temperatures at which ice is melted at the accompanying pressures:

—t°	.1°	2.5°	5.°	7.5°	10°	12.5°	15°	17.5°	20°	22.1°
Pressure kg. per cm.	1	336.	615.	890	1155	1410	1625	1835	2042	2200

It appears that the lower the temperature the less is the additional pressure requisite to produce a further lowering of the melting point by 1°.

When we reflect for how long a time air and water have been the objects of scientific investigation, it is indeed remarkable that they both still richly repay re-examination.

I take the liberty of quoting here a paragraph in a letter from Mr. Hugo Witt to me. "It seems to me to be a great mistake first to study aqueous solutions and then other solutions. Water is, as I believe to have shown, and as Roentgen, van Laar and others believe (Professor Arrhenius believes also, he has told me, in the ice molecules), a very complicated substance, and there must in the process of solution in water be great exceptions from the simple rules which exist for other solvents that are not associated. And the chapter in treatises on physical chemistry, 'Theorie der Lösungen' should rightly be entitled 'Theorie der Wässerigen Lösungen.'" Not only in the matter of solutions, but in other more strictly physical relations, it is a misfortune that the rôle of the typical liquid was assigned to water.

TYPHOID FEVER RESULTS FROM FILTERED WATER COMPARED WITH THE PREVIOUSLY UNFILTERED, AT ALBANY, N. Y.*

By GEORGE I. BAILEY; M. AM. SOC. C. E., Superintendent, Bureau of Water, City of Albany.

The true measure of the efficiency of a filter is the effect on public health, and the reduction of deaths from certain unmistakable water-borne diseases, as well as a general betterment in health conditions. The tables show comparisons between the year 1900, being the one calendar year that the filter has been in operation, with the previous ten years' records, although in the last four months of the year 1899 the filter was in operation, and the general average has the benefit of any decrease for those four months. In making comparisons it should be borne in mind that the only general improvement in sanitary conditions in our city has been the installation of the filter plant, and all tables show a reduction in death rates coincident with the operation of the filters.

In the monthly bulletin for December, 1900, issued by the State Board of Health for New York, occurs the following:

"The number of deaths from all causes reported for the year * * * exceeds the mortality of 1899 by 6,647, and the average of the past five years by 8,000. The increase over last year has been in all the sanitary districts except those of the central and southern parts of the State. Typhoid fever was unusually prevalent in the autumn, causing 1,948 deaths, 350 above the average. Diarrhœal diseases caused the average mortality, * * * notably increasing the late summer and autumn mortality of the rural parts of the State rather than the urban."

The above statements indicate then that there was an excessive mortality throughout the State, and that comparisons of the year 1900 with the average of previous years for this city does not give the advantage to the one year that rightly accrues to it. Notwithstanding this condition, we find that while the average number of deaths for ten years in Albany has been 2,186, the number of deaths for the year 1900 was only 1,742, a decrease (with the filter in operation) of 444 deaths, indicating generally a better condition of health.

*Abstract from a paper read before the American Water Works Association, June 18, 1901.—From "Albany Medical Annals."

Typhoid fever and sewage-polluted water are almost synonyms, still typhoid fever does come from other sources than an impure water supply, and in the present year in our city three deaths and about twenty cases have been traced to an impure milk supply. The general and common cause of it in cities and villages is, however, an impure water supply.

By the typhoid standard the Albany plant has been proven an immediate and certain success. The average yearly deaths from this cause for ten years (including four months of filter use) has been eighty-four. The number of deaths last year was thirty-nine. Of these thirty-nine, fourteen were unmistakably alien or imported cases, for which the city's condition is not responsible. In previous years, when an epidemic of typhoid has occurred up stream, either in Troy or Cohoes, an increase of cases has occurred in Albany. The last year was an exception to this rule, and, notwithstanding decided increases in both of the cities above us on the river, Albany decreased 54 per cent. in its number of deaths.

Another group is of "diarrhœal diseases." Diarrhœal mortality is not based upon so limited and direct causation as that of typhoid fever, which is only exceptionally due to anything other than infected drinking water, while in diarrhœal cases the mortality in early life is greatly affected by season, improper food, and the healthfulness of surroundings or lack of it. Water-borne filth germs are a cause as well; they have a greater vitality in water than the typhoid bacilli, and they reach the intestinal tract in the same way, and while diarrhœa and dysentery are not limited to the operation of such specific germs as are typhoid and cholera, they may be caused by any germs which attend the decay of organic matter. I think it fair that the filters should be credited with the decrease in mortality from this cause. The average number of deaths from diarrhœal diseases for ten years (including four months of filter use) has been 120. Last year the number was seventy. The decrease is, therefore, forty-two per cent.

PREVENTION AND CURE OF INSANITY.*

The curative treatment of insanity is, as yet, in its infancy. The insane have been regarded for too long a period, even in this country, as persons for whom custodial care only is required. In many

*Abstract from Eighth Annual Report of the State Charities Aid Association, New York, to the State Commission in Lunacy.

of our States large numbers of them are still to be found in jails and poorhouses. Advances, here and elsewhere, have undoubtedly been and are being made in the medical treatment of the insane, but very much in this direction remains to be done.

Insanity is not necessarily a disease confined to the brain, as is commonly supposed. The brain and the central nervous system are so intimately connected with every tissue and organ in the body that disease or disorders outside of the nervous system may be causes of insanity. Thus, mental symptoms may result from the defective assimilation of food, from impaired circulation, from malnutrition and from numberless other morbid conditions. In the nature of the case, these causes are as obscure as they are numerous. To isolate them, to recognize them, to determine their mode of action, is the most important object in the study of mental diseases to-day. For experience has shown that treatment directed toward causes is the only rational method of combating disease. The investigations which such work implies can only be carried on by the most industrious and skillful workers, and should be conducted by the ablest of our alienists and neurologists.

Why should not the insane have the benefit of the best medical skill our country affords, and which is now so freely given gratuitously by the most distinguished members of the profession to patients suffering from other diseases in other hospitals of every city of this State? Indeed, we have been assured by several of the most eminent neurologists and alienists of New York City that they will gladly serve as attending and consulting physicians, if a Reception Hospital for the Insane can be established at some accessible location.

The plan we would advocate for the accommodation of the 600 patients referred to above, and others yet to be provided for, is the erection, in several of our largest cities, of comparatively small reception hospitals, or psychopathic hospitals, as branches of existing State hospitals, and governed by the same boards of managers. These hospitals, designed for the reception and temporary treatment of insane patients, should be organized on the same general plan as are the New York, Presbyterian, St. Luke's, St. Vincent's, Roosevelt, and Mount Sinai hospitals of this city, and other well-managed hospitals elsewhere; with a superintendent and nursing staff, resident physicians, and attending and consulting physicians, who should be alienists and neurologists.

Into the Reception Hospital for New York City (a branch of the Manhattan State Hospital and taking the place of the wards for

the insane at Bellevue) would be gathered all cases of supposed insanity, as also recent cases of the committed insane; and here they should be examined and classified by the attending physicians before being treated either within the wards of the hospital or elsewhere. Persons found not to be insane would be transferred to municipal hospitals or alcoholic wards; cases of paresis or other marked forms of incurable insanity would naturally be sent directly to the appropriate department on Ward's Island or to Central Islip. Cases possibly curable would doubtless be kept for a limited period in the reception hospital, under the daily care and constant advice of the most eminent members of the profession, until it was thought best to send them on to the main hospital. There should be an outdoor department connected with the hospital, from which patients could be received into the wards, voluntarily, whenever hospital care might be deemed desirable as a preventive measure.

And the hospital should receive not only the destitute, but those able to pay for themselves, that all may receive the benefit of the services of the best trained neurologists and alienists that New York City can provide.

It is also desirable that the reception hospital should open its doors for clinical teaching. It is in the cities that are centred the medical schools which send out, year after year, graduates who know but little of mental diseases, because they have not had the proper facilities for studying them. Many of these young doctors begin their practice with very slight knowledge of a group of diseases which they will inevitably, during their professional career, be called upon to treat.

It is also under the roof of the New York Reception or Psychological Hospital that the already established Pathological Institute would naturally find its home.

We are not unmindful of the recent advances in medical science made in Buffalo and other of our State hospitals, and for which the new building at Rochester will offer special facilities. The proposed reception hospitals are designed to form part of the existing State hospital system. Controlled by the same boards of managers as the main buildings, they will be in close touch with all progressive scientific work wherever found, be this within or beyond the walls of the present buildings.

There is nothing new in what we are advocating. For many years psychopathic hospitals have been established in Vienna, Strassburg, Heidelburg, Leipsic and in other European cities. That of Giessen, opened in 1896, is the most recent, and is con-

sidered the best by one of our most eminent neurologists, who visited that institution and others in 1899.

The Giessen Hospital contains about one hundred patients, and consists of an administration or central building, and four cottages on each side of it for the two sexes. These cottages are designed for (1) excited cases; (2), restless and suicidal cases; (3), quiet cases; (4), private or paying patients. The administration building contains the scientific departments. Besides the regular clinical instruction there is also a polyclinic for out-door patients. These patients may or may not be admitted to the hospital, although this is always done when it is thought that timely hospital treatment may prevent insanity or serious mental disturbance.

Among the strongest advocates in this country of the establishment of psychopathic hospitals is Dr. Frederick Peterson, who for many years has spoken and written most ably in their behalf, as also in behalf of the colony system and other enlightened measures for the insane. "Some of the Problems of the Alienist," an address delivered before the American Psychological Association, in 1899, should be read by all who are interested in the better care of the insane.†

Until overcrowding is relieved, there can be no proper classification; without proper classification, but little progress can be made toward curative treatment. Relief from overcrowding is at last in sight; and the time has come when all efforts should be directed to the prevention and cure of insanity.

Respectfully submitted, for the Association,

LOUISA LEE SCHUYLER,
Chairman Committee on the Insane.

NEW YORK, 105 East 22d street, November 1, 1900.

NOTE.—There is no place in New York City (Borough of Manhattan) where a person suffering from mental disorder can be received for early or preventive treatment, and there is no place in New York City (Manhattan), since the removal of the Bloomingdale Asylum to White Plains, to which a person seized with sudden and violent mania can be taken, except to the wards for the insane at Bellevue.

*Psychiatrische Klinik zu Giessen," S. Karger, Berlin, 1899. "New Paths in Psychiatry," by Frederick Peterson, M. D., "Philadelphia Medical Journal," June 11, 1898. "A Visit to the Newest Psychopathic Hospital," by Frederick Peterson, M. D., President of the New York Neurological Society. "Medical News," January 20, 1900.

† "Some of the Problems of the Alienist," by Frederick Peterson, M. D., "American Journal of Insanity," Vol. LVI, No. 1, 1899.

THE CLIMATE OF LONG ISLAND.*

By LE GRAND N. DENSLOW, M. D., New York, Fellow of the New York Academy of Medicine.

From the "Medical Record."

A brief consideration of certain general meteorological influences to which the climate of Long Island is mainly due will give a better understanding of the subject in hand:

"The prevalence of westerly winds is the most obvious and permanent feature of the atmospheric circulation in the middle latitudes of the globe. This movement of the air masses in a measure communicates the conditions of the continental interior to the eastern coasts, while in the same manner the influence of the ocean is extended well inland along the western coasts. During the winter, heat is lost from large land surfaces by radiation much more rapidly than it is gained from the oblique rays of the sun; and consequently, in high latitudes, regions of intense cold are found within the continents. Over the ocean, on the other hand, radiation proceeds slowly, as compared with the rate on land surfaces, while vast quantities of heat are gained from equatorial currents. In summer, the increased heat received from the sun is absorbed more rapidly by land than by water, so that the thermal relation between continents and oceans is the reverse of that which obtains in winter."

This explains the apparently contradictory fact that our land winds are hot in summer and cold in winter, while those from the ocean are cool in summer and warm in winter.

Long Island is situated between longitude 72° and 74° and latitude 40° and 41°, extending almost east and west from New York Bay to Montauk Point, for about one hundred and twenty miles, lying between the great arm of the sea, Long Island Sound, and the Atlantic Ocean.

"The coast line of Long Island is strikingly irregular.‡ Along the north shore are eight deep and extensive bays, which form excellent harbors, and also a large number of inlets, most of which

*Read before the section on medicine of the New York Academy of Medicine, April 16, 1901.—From "Medical Record," June 1, 1901.

†E. T. Turner: "Climate State of New York." Weather Bureau, 1896.

‡F. J. H. Merrill: "Geology of Long Island." Annals New York Assoc. of Science, 1884.

are navigable. The east end of the island is penetrated by Great and Little Peconic Bays, to a depth of twenty-two miles, while the south shore, west of Southampton, for about ninety-five miles, consists of an intricate series of shallow creeks, partly surrounded by salt marsh, tributary to Shinnecock, Moriches, Great South, Hempstead, and other bays, which are divided from the ocean by long sand beaches (from one to five or six miles distant from the mainland), intersected in places by narrow inlets. Shelter, Robbins, Plum, Gull and Gardiner's islands, which form part of Suffolk County (Long Island), New York, do not differ from Long Island essentially in physical or geological characteristics. Long Island, as a whole, is comparatively low and flat, but throughout the central part is a range of hills extending from Bay Ridge northeasterly to Roslyn, and thence continuing to Montauk Point in a series of elevations, the more important of which are known as West, Dix, Comac, Bald and Shinnecock hills. The average height of this chain is about 250 feet, but at some points it is much greater. Harbor Hill, at Roslyn, is 384 feet above tide; Jane's Hill is 383 feet high; Renland's Hill has an elevation of 340 feet, and Wheatly Hill is 369 feet above the sea. There is also, along the north shore, an elevation which usually follows the contour of the numerous deep bays and inlets, varying in height from 30 to 200 feet, and almost continuous from Astoria to Orient Point. These two ranges of hills are the result of glacial action.

"South of the backbone, as the central range of hills is called, the surface is nearly level, gently sloping southward in an unbroken gravelly plain; while between this ridge and the north shore is a second plain, with an elevation of 50 to 100 feet, and especially noticeable between Port Jefferson and Riverhead. From many of the deep bays on the north shore, valleys extend through the hills in a southerly direction. There are thirty of these depressions, averaging about 25 feet in depth, usually occupied by small streams, most of which flow southward.

"There are no important lakes or rivers now on Long Island, but there are numerous ponds of clear, cool water, without visible inlet or outlet. The existence of these ponds depends on the fact that in the stratified sands of the island, which are underlain by clays, a uniform water-level, or plain, exists, which rises northward from low tide level on the south shore, at the rate of 12 1-2 feet per mile. Wherever a basin has been excavated below the surface of this plain, it would necessarily be filled by these subterranean waters, which, by their constant percolation through the

sand, would remain pure and clear, without material or sudden change of level under average conditions. The largest of these ponds is Lake Ronkonkomo, which is three miles in circumference and has a maximum depth of 83 feet.

"The geology of the island is comparatively simple. The greater part of it consists of gravel, sand and clay; also, along the south shore and to some distance inland, glacial sand, gravel and boulders. This gravel forms the soil of the pine lands of the southern and eastern portions.

"On Hempstead plains the wells are dug from 60 to 120 feet deep, through beds of gravel and sand, before water is reached, which is a little above the level of the ocean. The wells gradually decrease in depth thence to the shore."

The influence of the ocean upon the climate of Long Island can best be given as described in the "Eighth Annual Report of the New York Weather Bureau":

"Owing to the general eastward drift of the atmosphere throughout the year, the effect of the ocean upon the temperature of the Atlantic States is, under normal conditions, derived almost entirely from a restricted portion of the water surface contiguous to the coast. The air flowing toward low-area storms over the land may, however, occasionally be drawn from the region of the Gulf Stream, whose warmest axis is about three hundred miles from the coast of this State (New York). The stream at this point has a total width of three hundred miles (the width of the surface is considerably less), a mean temperature for the year of over 73°, and summer and winter temperatures of about 80° and 70° respectively in the latitude of New York. Notwithstanding the fact that cold or polar currents exist on the landward side of the stream, it is stated by Captain J. E. Pillsbury, U. S. N., that if the prevailing winds in New England in winter were southeast instead of northwest, the climate would be equal to that of the Azores Islands, mild and balmy. The current is in its place, ready to give off heat and moisture to the air, but the erratic movement of the winds may deliver this heat and moisture at unexpected times and seasons, and thus give rise to the erroneous belief that the Gulf Stream has gone astray. The writer has met with no investigations of the meteorological side of the question, and only the general statement can be made that, with a special distribution of pressure, extensive easterly wind systems may bring from the Gulf Stream to the coast quantities of heat sufficient to modify our climate considerably during brief periods.

"The nearest approach to a true maritime climate within the territory of New York is to be found at the eastern extremity of Long Island. The temperature conditions of this region may be represented without much error by the average mean temperature monthly values obtained at Block Island, twenty miles due east. On this account, all statistics obtainable from Block Island which are included in the tables used in this paper may be read as coming from the eastern end. Records from this part of the island are sadly meagre. The midsummer mean temperature is very nearly that of Malone, at the northern boundary of the State, while the temperature for January is between those of New York City and Washington. The equalizing effect of the water is thus very appreciable, although far below that exerted in the open ocean or on the western shores of the continents. A comparison of the normal temperatures of Block Island for the spring and autumn with those of stations in New York plainly shows the effect of the ocean in retarding the progress of the seasons. This averages for the eastern extremity of the island twelve days later than the main portion of the State. This condition is less and less marked in passing from the eastern to the western portion of the island. It has been shown that the average retardation of maritime, as compared with truly continental climates, is from twenty to twenty-five days.

"The sea breeze is an important feature of the summer weather along the south shore, tending to reduce the range of temperature by moderating the midday heat. It reaches the shore about the middle of the forenoon, or a little earlier, with a velocity of ten or fifteen miles per hour, and produces a marked and agreeable depression of temperature, with diminishing effects as it proceeds over the land. The breeze commonly penetrates inland about ten miles, but naturally to a greater extent when acting with the prevailing southwesterly winds of the coast, while it may be wholly overcome if opposing them. Thus the south shore of Long Island is favorably situated to receive the full benefit of the sea breeze. The sandy plains of southern Long Island rise gradually toward a ridge of low hills extending through the centre of the island nearly from the western to the eastern extremity, and which bear a considerable growth of timber. The northern side of the island is, therefore, somewhat sheltered from the force of strong sea-winds, which meet with but little obstruction on the southern shore."

Long Island, together with the rest of New York State, is influenced by the prevailing northwesterly winds of the winter, but

these, not being constant, produce an alternation of maritime and continental climates—the continental type prevails during the summer. On Long Island the continental type is less marked in winter than in any other portion of New York State.

The following table affords an opportunity to compare many widely separated localities:

TABLE I.—TEMPERATURES (MEAN).

	January.	*July.*	EXTREMES. *High.*	*Low.*	*Range.*
Block Island.....	31.0	67.6	83.0	54.0	31.0
Nantucket.....	33	67.3	80	54	26
Long Beach*.....	..	70	88	63	25
Cutchogue*.....	30.4	71.3	94	53	46
Setauket*.....	30.5	71.8	95	54	41
New York City.....	31	74.1	99	57	42
Atlantic City.....	32	73	94	58	36
Philadelphia.....	33	78.2	100	57	42
Baltimore.....	34	78.7	104	57	47
Denver.....	27	72.4	96	49	47
Los Angeles.....	53	70.4	91	56	35
San Diego, Cal.....	56.8	66.7	77	60	17

Taking Block Island observations as representing the eastern end of Long Island, and Long Beach the south shore, it will be seen that these localities have the coolest climate in midsummer on the Atlantic coast between Florida and Maine, with the single exception of Nantucket.

The effect of the ocean on range of temperature is marked on the south shore, it being but 25° for July, and with Nantucket standing next to and a close second to San Diego, Cal. (17°).

But four places in the United States have so low a range, viz.: Corpus Christi (22°); Eureka, Cal. (16°); Galveston, Tex (19°); and Key West, Fla. (18°); but these places are undesirable for residence during July, all having a mean temperature of over 81.6°, except Eureka, which is too cool, being but 54.6°.

The average daily difference in temperature between day and night was 7.3°, taking 3 P.M. (the hottest time of the day) and 8 P.M. for comparison.

*All points except Long Island (Govt. 1898). Or Long Island, 1900, with allowances for excess over normal + 2.3 for Long Beach and Setauket during July.

The climate of these portions of the island may be summed up as cool, comparatively dry, and very equable. Fogs are rare.

TABLE II.—MEAN TEMPERATURES.

	May.	*June.*	*July.*	*August.*	*September.*	*October.*
Block Island...	51.4	61.6	68.8	68.1	62.7	55.2
Setauket.....	61.4	67.0	71.8	71	66	51.9
Long Beach....	..	67.1	70	70.5	66.3	56

TABLE III.—FROST.

FIRST KILLING FROST OF AUTUMN.

	Earliest date.	*Latest date.*	*Av'ge date.*
Easthampton.....	Sept. 28th.	Nov. 27th.	Oct. 20th.
Flatbush.....	" 13th.	Oct. 26th.	" 4th.
Jamaica.....	" 2d.	" 28th.	Sept. 29th.

The influence of the sea upon the east and south shores is well illustrated by the foregoing table. The average date of first frost at Easthampton is three weeks later than at Jamaica on the western end of the island, and inland.

Again, there is a full month's difference between the same two localities in the occurrence of latest frost on record.

TABLE IV.—PRECIPITATION.

	Annual.	*Spring.*	*Summer.*	*Autumn.*	*Winter.*
Block Island.....	44.79	10.91	9.49	11.62	12.57
Easthampton.....	37.50	10.02	8.80	10.08	8.40
Setauket.....	50.80	12.50	12.50	13.80	12.00
New York City...	45.14	10.57	12.76	11.06	10.75

The greatest rainfall is in August, and extends over the northern shore to Setauket, but disappears at Easthampton and the east end. Over the greater part of the interior of New York State the precipitation during the summer is the greatest of the year. The

reverse is the case with the east and south shores of Long Island. Sea winds from the southeast find no obstruction along the south coast, but, passing inland, meet the hill ranges along the north shore and give copious rainfall, as noted at Setauket.

TABLE V.—SUNSHINE TABLE, FROM UNITED STATES GOVERNMENT REPORT, 1898-99, ARRANGED IN ORDER OF NUMBER OF CLEAR DAYS.

	Clear.	*Partly cloudy.*	*Cloudy.*
San Diego, Cal.	291	26	48
Yuma, Ariz.	287	53	25
Fresno, Cal.	262	52	51
Phœnix, Ariz.	259	71	35
Red Bluff, Cal.	243	68	54
Oklahoma.	233	64	68
Cutchogue, L. I.	228	84	53
San Luis Obispo, Cal.	226	91	48
Amarillo, Tex.	221	86	58
Sacramento, Cal.	217	86	62
El Paso, Tex.	212	118	35
Narragansett Pier, R. I.	208	31	126
Carson City, Nev.	202	133	30
Santa Fé, N. M.	201	109	55
Bismarck, N. D.	198	82	85
North Platte, Neb.	193	116	56
Tampa, Fla.	178	143	44
Los Angeles, Cal.	160	172	33
Denver, Col.	150	162	53
Jacksonville, Fla.	147	167	51
Setauket, L. I.	145	121	99
Atlantic City, N. J.	123	139	103
New York City.	109	124	132
Nantucket, Mass.	91	105	169
Rochester, N. Y.	66	136	163

The question of the amount of sunlight is of highest importance in estimating the value of a health resort. It has been found that a want of it will develop symptoms of general depression and a condition analogous to intermittent fever, while an abundance, on the contrary, invigorates, acts as a general tonic, purifies the air, and allows the fullest amount of out-of-door life. The writer is satisfied that this one element of sunlight in the highest degree is a

great, if not the most important, climatic curative factor in tuberculosis of the lungs, and that which has deservedly given to the climates of Southern California and Arizona their recognized value in the treatment of that disease.

The amount of sunshine on the east end and south shore of Long Island is the most marked characteristic of the climate; Cutchogue, for example, having one hundred more clear days than New York City, and one hundred and sixty-two more than Rochester, in the northwestern part of the State. Again, at Cutchogue, which will represent the eastern end* "during the months of June, July, August and September, 1899, there were but eleven cloudy days, and during the corresponding months of 1900 there were but seven."

TABLE VI.—SUNSHINE TABLES, UNITED STATES GOVERNMENT REPORT, 1898-99. ARRANGED IN ORDER OF NUMBER OF CLEAR AND PARTLY CLOUDY DAYS.

Yuma, Ariz.	340	Red Bluff, Cal.	311
Carson City, Nev.	335	Santa Fé, N. M.	310
Los Angeles, Cal.	332	North Platte, Neb.	309
Phœnix, Ariz.	330	Sacramento, Cal.	303
El Paso, Tex.	330	Oklahoma, Okla.	297
Tampa, Fla.	321	Bismarck, N. D.	280
San Diego, Cal.	317	Setauket, L. I.	266
San Luis Obispo.	317	Atlantic City, N. J.	262
Amarillo, Tex.	316	New York City.	235
Fresno, Cal.	314	Narragansett Pier.	239
Jacksonville, Fla.	314	Rochester, N. Y.	202
Cutchogue, L. I.	312	Nantucket.	196
Denver, Col.	312		

Table V, giving the number of clear days at all the Government stations in California, Arizona, New Mexico, Colorado and Texas, where observations are taken, as well as others in Florida and along the Atlantic coast for purposes of comparison, show the portions of Long Island under consideration to have a favorable position in the list among the places having 200 or more days, classing with such as Phœnix, Ariz., El Paso, Tex., and Santa Fé, N. M.; while Denver, Col., Los Angeles, Cal., Jacksonville, Fla., and Setauket, on the north shore of Long Island, are lower in the list, with about 150; Atlantic City having about 123; New York, 109; Nantucket, but 91, and Rochester at the bottom, with 66.

*W. A. Fleet, Government Observer. Letter of December 31, 1900.

These tables include all places in the United States where Government observations are taken, and are for the year 1898. A few below 200 are used for comparison. The two points on Long Island are for 1899:

TABLE VII.—CLOUDY DAYS.

Nantucket, R. I.	169	Cutchogue, L. I.	53
Rochester, N. Y.	163	Denver, Col.	53
New York City	132	Fresno, Cal.	51
Narragansett Pier	126	Jacksonville, Fla.	51
Atlantic City, N. J.	103	San Diego, Cal.	48
Setauket, L. I.	99	San Luis Obispo	48
Bismarck, N. D.	85	Tampa, Fla.	44
Oklahoma, Okla.	68	Phœnix, Ariz.	35
Sacramento, Cal.	62	El Paso, Tex.	35
Amarillo, Tex.	58	Los Angeles, Cal.	33
North Platte, Neb.	56	Carson City, Nev.	30
Santa Fé, Neb.	55	Yuma, Ariz.	25
Red Bluff, Cal.	54		

Viewing it from the standpoint of Table VI, or the number of clear and partly cloudy days taken together, Long Island still holds its place near the points already mentioned in California and Arizona, being equal in number (312) with Denver (the latter place coming up on the list with its large number of partly cloudy days, viz., 162, against Long Island's 84) and still being above Santa Fé, N. M., and other points in California and the Northwest; with Atlantic City and the north shore of Long Island about 265; New York City, 233; Rochester, N. Y., 202; and Nantucket this time at the bottom of the list with 196.

In Table VII, cloudy days, east Long Island still holds its place beside Denver with 53, and classing with San Diego, Cal., and Florida, having fewer than Santa Fé and points in California, Texas and the Northwest, while the north shore has 99; Atlantic City, 103; New York City, 132; and Nantucket again in the most unfavorable position, with 169.

Relative Humidity.—In seeking a healthful climate, its relative humidity is taken into consideration, and particularly when relief is sought for in lung, kidney and rheumatic troubles.

A residence of several years in pursuit of health in Southern California, Arizona, and other dry climates of the West enabled the writer to recognize, during a vacation last summer on the south

shore of Long Island, the marked dryness of the air, and led to the taking of the observations, and later of investigations, the results of which are given in this paper.

TABLE VIII.—RELATIVE HUMIDITY—AVERAGE PER CENT.

1898.	*Aug.*	*Sept.*	1898.	*Aug.*	*Sept.*
Nantucket.....	92	86	Los Angeles.....	71	69
Block Island.....	88	82	Long Beach.....	60	54
Atlantic City.....	87	83	Santa Fé.....	52	32
Jacksonville.....	86	86	El Paso.....	52	44
Tampa.....	86	85	Yuma, Ariz.....	50	43
San Diego.....	83	77	Denver.....	45	39
Oklahoma.....	76	70	Phœnix.....	44	38
New York City.....	78	75	Red Bluff, Cal.....	31	39

In this table the figures are from Government Reports, 1898, except Long Beach; these were taken in 1900 on the north side of a piazza, about 25 feet from the ground, with hygrometer.

For convenience when writing, we might class a climate with

About 55 per cent. of relative humidity as very dry.
From 60 to 65 " " " " dry.
From 65 to 75 " " " " medium.
From 75 to 85 " " " " moist.
Above 85 " " " " very moist.

It will be seen by this table that the south shore, in August and September, may be classed as dry—much drier than any location on the Atlantic coast, or Los Angeles and San Diego on the Pacific.

Summary.—Five elements go to make up a climate—earth, air, water, sunlight and temperature. The best possible soil to insure good drainage, pure water, and the least amount of moisture to be given off to the air, is sand and gravel. This constitutes almost the entire island. The configuration of the land is good, a central ridge, with gradually sloping plains to the sea on one side, with boldly indented shores and an inland sea on the other.

The air is both ocean and shore, with great mobility, due to the constant daily ocean winds. The water from the wells and springs is of the purest, freer from salts and vegetable matter than that in ordinary soil or mountain regions. The water of the air has already been referred to under humidity, clouds, fogs, rain, etc., and it is not anywhere in the island excessive; in fact, over the greater por-

tion it compares in amount favorably with some of the most celebrated coast climates.

This study was not commenced with any preconceived ideas or prejudices, but simply, having observed certain symptoms always occurring in dry climates, I was led to go over all the information obtainable, and have given the facts found. They were certainly a surprise, as they probably will be to some of you. I do not pretend to account for the existence of this limited area of excessive sunshine and dryness of atmosphere in the midst of a moist coast-line. Our knowledge at present of upper currents and cloud distribution is limited, and the answer must come, if at all, from students of those subjects.

The practical side of the question is that we have a climate within from one to three hours of New York, where many suffering from diseases that will at once suggest themselves to you may, by a sojourn or residence, be benefited; also, that it is worthy of investigation as to the extent of its therapeutic value. It is certainly worth a trial, when, for many reasons, a long journey to the Rocky plateau or Pacific coast is inadvisable. Its best field would seem to be in those cases of heart, lung, kidney and rheumatic troubles in which rapid oxidation is desirable in a sunshiny, dry, slightly stimulating climate, at a low level, and where, during from four to six months, or from May to October, almost every day may be with comfort passed out-of-doors, under a sky that, for absence of clouds, has no rival in the United States outside of Arizona and California, with the exceptions of Amarillo, Tex., and Oklahoma, Okla.

49 West Forty-fourth Street.

AMERICAN HOSPITAL PRACTICE.

In discussing the hospital work and the ration in the China campaign, Dr. Seaman, at the meeting of the Association of Military Surgeons, at St. Paul, May 30, 1901, said in part:

"It is interesting to note that on their arrival in China it was the boast of the medical officers of the German army that typhus fever (our typhoid or enteric) and dysentery were comparatively unknown visitors to their camps. Criticisms of the losses of the American army from these causes during the Spanish-American war by our Teutonic colleagues are not yet forgotten. Within two

months of the arrival of the German army in China its hospitals contained over 500 cases of typhoid fever, followed by an appalling list of fatalities, while the wards of the American hospitals were and are still singularly free. I found but one case either in Tien-Tsin or Peking, and this man was a convalescent, while the number in the German wards still remained in the hundreds.

"Indeed, it may be added, the Americans had the only water-distilling plant in operation in Pekin. Its capacity was so much greater than the requirements of our army that two tons of the surplus water was donated by the Hospital Department to the Japanese every day of the winter. The American quartermaster, Major Byron, also cut and stored 800 tons of ice in Pekin. It was the only ice ever housed in that ancient city, and curious bodies of natives used to gather around the camp to watch the novel work of the 'foreign devils' and coolies.

"The low percentage of all illnesses except those of a private nature, and especially the almost total absence of the class termed 'digestive disease,' offer a startling contrast to conditions existing during the Spanish-American war in Porto Rico or Cuba. There I have seen as high as 75 per cent. of a command suffering from these diseases at one time, and in the Philippines the percentage of these cases remains persistently high. One naturally looks sharply for the cause of this startling difference, a difference of from 1-200th of 1 per cent. to 75 per cent.

"A Fine Cold Weather Ration.

"A glance at the men at their mess and a consideration of their environment disclose the secret. What appetites—what digestion! You would not believe these men were the emaciated, sallow-cheeked troops who came as the American army from the Philippines last summer. But they are. Here in this invigorating zero temperature, where animal heat is rapidly radiated, and where nutritious foods, rich in fats and carbon, are requisite to maintain the body's temperature, the men show evidences of splendid health. In China heat-producing foods are needed. Even our full army ration, the richest and most varied in the world, and the envy of every soldier of the allied armies in China, was not found sufficient to satisfy the cravings of the men. Repeatedly officers have told me their 'company funds' were largely depleted by the constant demands of the men for extra allowances. Their appetites were enormous, their food was digested, assimilated, and metabolized. The energy of their systems was not consumed in an

effort to eliminate these heat-producing foods, as was the case when they were in the tropics, where they lived in an environment of heat, and where such foods were superfluous or inappropriate, and therefore were not digested or metabolized. Under these conditions such foods rapidly undergo decomposition in the intestinal tract and create toxines, which Nature endeavors to eliminate as quickly as possible by establishing catarrhs and diarrhœa as the only method left to rid herself of such irritants.

"And yet Congress has just decreed that no change shall be made in the United States army ration—that it shall remain practically the same at the pole as at the equator. The advocate of the present regime says: 'The soldier could always sell or commute his ration.' Yes, provided he always had a market with him on his 'hikes,' but those who have served with him in a hostile country or on the firing line, where he most needs a proper diet, know much better. The impartial and scientific observer sees in this answer only the bureaucrat's subterfuge dictated by a spirit of ignorance or obstinacy and resistance to change from established routine, and a lack of courage to shoulder responsibility for fatal blunders that have long crowded our tropic hospitals and made the mournful notes of 'taps' so familiar in the land.

"Let it not be forgotten that in the Spanish-American war, the actual hostilities of which lasted but six weeks, there were fifteen fatalities from disease (practically all preventable) for one from bullets and wounds. If any vindication were necessary for the theory of regulating the ration of an army to suit climatic conditions, unanswerable proof can be found in Peking in the study of the statistics of every company serving in the Chinese expedition. At my earnest solicitation Capt. Anderson, commanding Company A, Ninth United States Infantry, obtained the following figures for me: His command, numbering eighty-five, came from Manila to China with the first American troops, landing at Taku last June. At that time twenty-nine, or 33 per cent., of the men were suffering from chronic diarrhœa contracted in the Philippines. On their arrival in China the combined weight of the company was 12,304 pounds. (I have the individual figures.) On Feb. 15, 1901, the same men weighed 13,284, or an average gain of about thirteen and a half pounds. There was not a case of so-called 'digestive disease' in the company, or a man in the hospital."

STATE HOSPITALS FOR CONSUMPTIVES.*

By WILLIAM E. FISHER, M. D.,
Assistant Physician at the Hospital for the Insane, at Middletown, Conn.

The knowledge acquired through Koch's discovery that tuberculosis is an infectious disorder, and what is still more valuable, that it can be early recognized while still curable, and that to a certain extent it is preventable, has aroused the greatest enthusiasm among medical men, and has resulted in practical methods of procedure for not only in a measure curing the disease, but in preventing the diffusion of the infection. In fact, more and more hopeful views regarding the curability of tuberculosis prevail, and in order to arrive at the best attainable results, our efforts in common should be directed to strengthen resistance, cure the disease, and restrict infection. For all practical purposes the source of infection in tuberculosis can be divided into three great classes:

1. The expectoration of consumptives.
2. The milk from tuberculous cows.
3. The flesh of tuberculous animals.

It is not meant to convey the impression that other sources of infection do not exist, but they are of little importance to the sanitarian. Of course, it has been proven that tuberculosis is transmitted by heredity, but the cases are so rare that they merely present interest to scientific investigators, and a great stride toward sanitary control of the disease would be made if people's minds were disabused of the idea that heredity is a factor of any importance in the transmission of the disease.

The fact that the expectoration of consumptives contains tubercle bacilli, and is the cause of the disease in others, has repeatedly been conclusively proved, and needs no argument. As long as the expectoration is kept moist, the tubercle bacilli are not distributed through the air, but as soon as the sputum dries they are liberated, and float in the air as fine particles, too small to be observed, and their inhalation with the breath causes the disease in others. So long as consumptives are allowed to spit on the streets, or on the

*Abstract of paper read at the meeting of the Central Medical Society of Middletown, Conn., 1901.

floor of street cars, or other cars, in halls, or other public places, there is danger to the public, and the damage increases proportionately as the sunlight and fresh air decrease, so that the danger from indoor expectoration is greater than out-of-door spitting. It frequently happens that through carelessness, ignorance or feebleness, the consumptive spits on the bed linen, where it dries and becomes a source of infection. How frequent, we all know, is the practice of spitting on the handkerchief! The handkerchief dries quickly, and each time it is used the germ-laden dust infects the atmosphere. The question has been raised as to the relative degrees of danger from expectoration in different stages of the disease. Some have considered the danger slight in the early stages, but great in the later period, when there is cavity formation and profuse expectoration. When it is considered that the earliest diagnostic method recommended to-day is the examination of the expectoration for the tubercle bacilli, and that they are frequently found before physical examination reveals the presence of the disease, it will be seen that the early incipient cases are great sources of danger, especially so when it is remembered that cavity cases with abundant expectoration often show comparatively few tubercle bacilli, but do show immense numbers of pus organisms.

An important question regarding the expectoration arises—Who are liable to be endangered by carelessness in disposing of the sputum?

1. The consumptive himself. It has been conclusively proven that many cases terminate fatally by reason of infection with the patient's own expectoration.

2. All persons who are more or less intimately associated with the consumptive, such as nurse, husband, wife, etc.

3. All persons, and by that we mean the public generally, are endangered by expectoration on the streets and other public places.

4. Animals are liable to contract the disease from the expectoration of human consumptives. The identity of animal and human tuberculosis has been demonstrated beyond the possibility of a doubt. An inspector of herds in one of the States is able to predict the condition of a herd from the condition of the persons in charge of the same. If he finds tuberculosis among those who have charge of the cattle, he can predict with absolute certainty that he will find it among the herd.

That cows suffering from tuberculosis may give milk containing tubercle bacilli is universally accepted among competent observers. Tubercle bacilli have repeatedly been found in such milk. Animals

have been inoculated with the milk, and have died from typical tuberculosis. Other animals have been fed the milk of tuberculous cows, and have succumbed to the disease. An owner of known tuberculous cows fed the milk, without previously boiling, to pigs. They became tuberculous without exception, and had to be killed. There is no reason to believe that young children, or even adults, are less susceptible to the virus than pigs, so that the danger from this source is real and serious. A boarding school in Paris had fourteen girls, nine of whom developed tuberculosis in a short time. It was discovered that all had been using the milk from one cow, and that that cow was markedly tuberculous. It is curious, but in Iceland, which is without cows, human tuberculosis is unknown. Japan was free from tuberculosis until cows were introduced from America. Since that time the disease has rapidly developed, and now nearly one-third of all deaths are due to that disease.

There has been a large amount of investigation in connection with the possibility and the probability of tuberculosis being carried from animal to man in the flesh of animals used as food. Experiments have been made consisting of the feeding of tuberculous flesh to animals free from tuberculosis. While it does not happen that tuberculosis will always follow the eating of tuberculous material, it has resulted in a sufficient number of cases to show beyond doubt that this disease may be transmitted by the flesh of animals suffering from the disease. In New York city for six years the average annual death rate from tuberculosis per 100,000 among Russian Polish Jews was but 76.72, while for the remainder of the population it was 427.75. When their scrupulous care as to meat inspection is considered, one cannot help wondering if this may not have some effect in producing this wonderful relative immunity to the disease.

Some idea of the magnitude of the problem to be solved can be gained when we consider the statistics of the Board of Health reports for Greater New York during the year 1900. Up to and including September 22, there were 6,079 deaths from pulmonary tuberculosis, from which could be deduced a total number of deaths for the year (1900) of about 8,100. If we remember that the death rate and the average duration of the disease remain about the same, we are forced to the conclusion that there are about 8,100 new incipient cases each year taking the place of those who had died.

Granted the conditions are as stated, the question naturally

arises as to what practicable methods can be adopted to care for the consumptive, and thereby restrict the diffusion of the infection, as one necessarily means the other. The only ground on which the interference of State charities is justified is that of self-protection.

In the case of the dependent classes, such as the insane, deaf mutes, and the blind, protection against injury to life and property, or against the loss to society arising from enforced idleness and lack of education on the part of the sufferers, furnishes the excuse. In the case of infectious diseases, the danger to health and life from the extension of such diseases justifies the erection of contagious-disease hospitals of all kinds, and the expenditure of large amounts of money in the establishment and maintenance of quarantine stations. The erection and support of hospitals simply for the relief of suffering and healing of diseases is, from the standpoint of strict political economy and true statesmanship, a flagrant misuse of public funds, and leads to serious abuse. The comparatively recent but now universally accepted discovery of the communicability of tuberculosis, necessarily changes the whole aspect of the question. So long as it was considered that consumption was simply due to heredity and general environment, a plea for State aid had no basis in any proper conception of the duty of the government to the individual. Granted that one person in fifty was affected with consumption and that over a million and a quarter deaths were annually due to tuberculosis in the United States—what business was that of the State? People must die of something—why not of consumption, as well as Bright's disease or any other disease—and if there was suffering among the poor consumptives, that was a matter for consideration and relief by private philanthropy. But once admit that consumption is an infectious and therefore a preventable disease, and the whole situation is changed. The State is losing tens of thousands of valuable productive lives prematurely and unnecessarily every year. Thousands more are wasting their time in taking care of those slowly dying. Here is a terrible leak in the public resources, a leak which should be stopped. That which before would have been an unwarrantable use of the public treasury, now becomes an imperative duty on the part of the State as a custodian of the material prosperity of the people.

In Philadelphia in the year 1898 there were 3,000 deaths from consumption. The provision for the treatment of poor consumptives was for 297. How inadequate the provision and how great

the needs! General hospitals are justified by their responsibility for the health of other patients to exclude consumptives from their general wards. Is it not a crime to allow this immense mass of sufferers—for what is true of Philadelphia is true of other places—to go without proper hospital care and treatment? Individual organized charity has its limitations, and is unable to successfully cope with the emergency. State governments must recognize their responsibility and make adequate provision for the treatment and cure of a disease which at this moment is disabling to a greater or less extent a million and a quarter annually of the people of this country, and which annually kills four and a half times as many as small-pox, scarlet fever, typhoid fever and diphtheria combined. It therefore becomes the duty of those who appreciate the true proportions of this problem, to become missionaries to spread about the knowledge both of the curability and the preventability of consumption, and at the same time the necessity for hospital provision on a generous scale. If pulmonary tuberculosis is preventable, the consumptive has a claim upon society by the virtue of the very fact that he has become an innocent victim of the disease. He has been permitted to suffer a continued exposure to infection, after having been subjected to such conditions of ventilation and hygiene as to bring about an increased susceptibility. Both the exposure and the lessened resistance have been to a great extent preventable; "who has jurisdiction to prevent, if not society?"

Another claim, which rests more particularly upon the medical profession, is the distressing delay in securing accurate diagnosis. Incipient cases are the most curable. Mistaken or delayed diagnosis at this time is almost invariably associated with results of a most disastrous character. Statistics show that the average duration of the disease before arrival in Colorado is some eighteen months.

The microscopic examination of the sputum for the characteristic bacilli; the use of the X-rays, which gives to the experienced observer the shadowy outline of tubercular nodular infiltration even before the bacilli appear in the sputum; the tuberculin test to obtain the characteristic reaction, and the test of Arloing, who has discovered that when the blood of a tuberculous patient, in a dilution of one to five, or ten, is added to a homogenous liquid culture of the tubercle bacilli, the bacilli become agglutinated, or clump as in the "Widal" test for typhoid fever, now afford the physician the means for an early recognition of the disease, and render him criminally negligent if he does not avail himself of every possible

test to detect the existence of tuberculosis in its incipient stage in every possible suspect.

Another consideration to which the consumptive is entitled is that of humanity. He is entitled at the hand of the State to every energetic provision that may save or prolong his life, and to every attention that may help to alleviate his suffering. Especially is this true of those who have not the means to subsist without work. If the State is called on to provide institutions for her non-consumptive poor, who are frequently reduced to poverty through their own responsibility, and who are never to resume their functions as citizens, but are destined to remain forever as a burden to society, how much more should the State be obliged to provide similar institutions for those who have suffered, usually through no individual liability, who represent an entirely different class of citizenship, and who in many instances, with such provision, can resume their duties and former positions in the community! The claim is reinforced when you also consider the added protection to society itself.

We might here pertinently inquire, What are the claims of society with reference to the consumptive? In the absence of certain precautions incident to the consumptive's daily life, he is a direct source of contagion, and therefore a menace to his family and the public. A strict conformity to certain prescribed instructions prevents him from being an element of danger; hence, it is incontrovertible that society has the right to expect and demand of the consumptive the most rigid observance of sanitary rules. This can only be accomplished by educational methods, and how better can such methods be propagated than by legislative enactment, State and municipal control? The campaign of education should include the compulsory notification and registration of all cases of pulmonary tuberculosis. This does not mean the placarding of the house or apartments, or interference with social aspects and business relations. Notification should be made obligatory upon patient, physician and householder, so that periodical disinfection of apartments could be made under the supervision of health departments, and the patient furnished with printed instructions regarding himself and family. He should be supplied with a circular explaining the danger of infection and reinfection; with minute details of all necessary preventable measures, and an emphatic demand for their observance.

Public printed instructions for free distribution should be made, explaining the comparatively few methods of infection, and that

infection can only be conveyed through gross violation of the precautionary measures. It should be shown that infection is very slow, and seldom results from a single exposure, and that unless the soil is rendered receptive by lessened resistance, infection is unlikely.

What are the advantages of sanitary treatment of tuberculosis when change of climate is not possible? As a result of sanitarium treatment the patient is enabled to have, in addition to the educational methods just mentioned, fresh air, out-of-door life, and a regimen of rest, diet, exercise and sleep, which increase his resistive force, and either repress or destroy the bacilli; in addition, he is nursed by expert hands, under the guidance of men of high professional attainments. The best authorities claim that it is safe to say that 20 per cent. can be cured and at least 10 per cent. can have the disease arrested if treated in sanitariums properly conducted.

The results obtained by the establishment of sanitariums for consumptives as private enterprises in Europe, and notably in Germany, were so gratifying as to lead the charitably inclined to feel that a burden of responsibility had thus been laid upon them for the extension of the opportunities of this kind to those who were unable to pay for them. As a result, sanitariums have been erected in Germany, so that about 20,000 incipient cases now receive treatment for three months each, and 72 per cent. of these cases have been returned to the rank of wage earners. In England there are now accommodations for about 5,000 consumptive sufferers, either in hospitals for advanced cases, or in sanitariums for those in the earlier stages. In London there are six consumptive hospitals.

The first report of the Canton of Zurich Sanitarium for Consumptives in Switzerland, located at Wald, gives the following results: The hospital has 88 beds, 72 of which are continuously occupied. Eight hundred and nineteen patients were admitted, and remained on an average 104 days. Thirty-six per cent. belonged to the first stage; 26 per cent. to the second stage, and 37 per cent. to the third stage. Out of 76 patients in the first stage, 48 were cured, and 22 more discharged eminently better—of the second stage there were 55. None was cured, but 35 were discharged eminently better. Of the 78 in the third stage, only 13 were eminently better, and none was cured. Sweden, Belgium, Holland, France, and Spain are all establishing consumptive hospitals. The Swedish Parliament recently voted 850,000 crowns for a sanitarium in South Sweden, and a gift of 2,200,000 crowns

from the people to King Oscar has been devoted by him to the establishment of similar institutions in Northern and Central Sweden. The Legislature of New York has made an appropriation for the erection of a sanitarium, and the special commission appointed by Governor Roosevelt recommended Lake Clear as the proposed site for the buildings. Massachusetts has an institution in operation at Rutland which cost $150,000. The United States has a sanitarium for sailors at Fort Stanton, New Mexico, and the army has a hospital at Fort Bayard, in the same territory. At Fort Stanton the elevation is 6,126 feet. There is room for 200 patients. The hospital was officially opened April 27, 1899. To date, October 20, 1900, there have been 70 patients admitted. Six have died—24 have been cured—20 are still at the hospital with the disease apparently arrested. Of the remaining 20, five only show any amendment. Of the six who died, only one was considered a favorable case. He had a small cavity which apparently began to heal. He showed decided improvement, and would probably have recovered, but contracted pneumonia of the sound lung, and in consequence died. The United States hospital at Fort Bayard gives the following report. From October 4 till August 6, 1900, 165 patients were admitted—with the following results:

	Discharged.	Remaining.
Not improved	14	21
Improved	20	54
Convalescent	11	26
Cured	4	1
	49	102
Died	14	

Cases are considered cured when they no longer react to tuberculin, and when no tubercle bacilli can be found in the sputum. When all active symptoms have disappeared, but cases still react to tuberculin, they are considered convalescent. The results are particularly gratifying when it is known that of the 116 cases reported as improved, convalescent and cured, at least 75 per cent. were considered practically well, and by continuing to reside in the same climate were considered well enough to return to their ordinary vocations and become producers.

Many equally gratifying statistics could be cited, but enough

has been advanced to show the advantages of hospital care and treatment for the consumptive, and that the concensus of opinion of the best authorities advocates State and municipal control, for the purpose of:

First—Establishing asylums for the hopelessly sick; second, sanitariums for the remediable cases; third, disinfection of streets, buildings, public places and public conveyances; fourth, education of the people; fifth, improvement of the general physical tone and stamina, thereby strengthening resistance.

The United States has generously proposed to donate to any State in the Union tracts of land, with eligible building sites, in the States or Territories which offer the best climatic advantages for the consumptive. What better could the State do than avail itself of this generous offer? If it should prove too costly to thus provide for all cases, provision could at least be made for the incipient cases, with hospital care at home for advanced cases or those who for some reason would be unwilling to go out of the State. If this plan should be considered impracticable, hospital care for all cases should be provided by the State in that location in the State which offers the best advantages. The least possible that the State can do is to provide sufficient funds for certain designated general hospitals throughout the State, to erect wards for the separate treatment of incipient and advanced cases.

The main argument against the establishment of State sanitariums is the expense, which must appear in an entirely different light to every one who studies the facts; that is, to every one who studies what it costs society to support the consumptive till he dies, and what it would have cost had he been cured, or at least sufficiently improved by treatment according to modern methods to permit him to return to the ranks of bread winners.

Enormous sums of money are being spent to-day without the saving of a single life, merely because it is being spent at the wrong time. Our motto should be, as expressed by Dr. Pryor, of Buffalo, N. Y.: At the right time, in the right place, and in the right way until cured; not at the wrong time, in the wrong place, and in the wrong way until dead.

AMERICAN PUBLIC HEALTH ASSOCIATION.

Twenty-ninth Annual Meeting, Held in Buffalo, N. Y., September 17-20, 1901.

ABSTRACT OF PROCEEDINGS.

The sessions were held in the Seventy-fourth Regiment Armory. Dr. Benjamin Lee, Secretary of the State Board of Health of Pennsylvania, president.

Dr. Stephen Smith, of New York, first president of the association, in 1872, made the opening address. He referred to the havoc which death had wrought in the ranks of the association during the past decade, and in review of the progress of public health administration in the United States, said in part:

"Thirty years ago there were but three or four well-organized municipal boards of health in this country, but to-day there is scarcely a civil organization without its department of health. This association has been largely instrumental in the development of a complete system of public health administration in this country, municipal, State and national. A national board of health, which was at one time established by Congress, existed but four years, and for twenty years we have been without such a body, chiefly because of a want of harmony among those who approach Congress on the subject."

Dr. Smith then referred to the early history of the Marine Hospital Service, saying that it was originally created at the close of the eighteenth century, in imitation of the English system, when the sailor's home was on the sea, but since the steamship has supplanted the sailing vessel, the sailor's home is at the port. All great advances, he said, in health legislation result from the devastation of epidemic pestilences.

Dr. A. L. Gihon, U. S. Navy, moving a vote of thanks to Dr. Smith for his address, drew attention to the fact that while on his right sat the Director-General of Public Health for Canada, and on his left the head of the Supreme Department of Health of Mexico, the United States had no such officer, and said that a demand should be made on the Government to make such an appointment.

Out of respect to the memory of President McKinley, and in accordance with the national and State proclamations relating thereto, it was decided to hold no meeting on Thursday, September 19.

Dr. Frederick Montizambert, of Ottawa, Canada, and Dr. Edu-

ardo Liceaga, of Mexico, feelingly referred to the sad event which had just culminated in this city, and extended the sympathy of themselves and their countrymen.

Some Results of the Army Canteen or Post Exchange from the Standpoint of Discipline and Hygiene.—Captain Edward L. Munson, Assistant Surgeon in the United States Army, read statistics he had compiled from the official records of the War Department, comparing the figures of two periods. The first period, which he called the precanteen period, consisted of the seven years from 1885 to 1891, inclusive. Though the canteen was first introduced in the army in 1889, it was not thoroughly established until 1892. The second period began with that year and ended with 1897. He did not quote figures after 1897, because he did not believe the figures of the last three years of active service in the army could fairly be compared with the figures for a period in the time of peace, although he commented that, as a matter of fact, the figures for 1898, 1899 and 1900 show even a more marked improvement in those conditions of the army that were affected by the canteen than the figures for the six years immediately preceding 1892 showed over the precanteen period from 1885 to 1891. The paper showed that for the ten years from 1878 to 1887 the ratio of soldiers entered upon the sick reports for alcoholism was 64.28 to 1,000; that this rate was diminished as the canteen was gradually introduced, and that comparing the period 1885-1891 to the period 1892-1897, the statistics showed a reduction of 23.6 per cent. in the entries for alcoholism on the sick list in favor of the latter period. That, whereas, in 1890, before the canteen was fairly established, the number of posts at which the alcoholism entries on the sick list exceeded 10 per cent. of the total strength of the garrison, in the following year the number of such posts was 11, and each succeeding year the number was reduced until, in 1897, there were only two posts throughout the army which showed a greater rate of alcoholic sick cases than 10 per cent. of their total strength. The author showed that the gravity of the cases of alcoholism also was reduced through the influence of the canteen, and that the number of cases of insanity diminished during the period in which the canteen was thoroughly established.

The profits of the canteen each year were returned to the men for the purpose of buying better food, reading matter, gymnasium and athletic equipment, and in other ways to make their lives more comfortable and the military service more attractive. The writer showed that during the period of 1892-1897 there was an increase

of 13.3 per cent. in the number of soldiers making deposits with the army paymaster over the number for the precanteen period, 1886-1891. Also that the average number of convictions by court-martials for drunkenness during the precanteen period was three hundred and seventy-two a year, whereas the average number after the canteen was established was but one hundred and sixty.

Much might be said to show the remarkable influence which the canteen, with its restricted sale of beer and light wines, has had in preserving the health of troops, maintaining discipline, and promoting temperance; but in view of the figures given, further argument on the subject would seem to be unnecessary. The canteen, as formerly operated, was a positive element for good, and is so regarded by 95 per cent. of the more than six hundred officers of the army who have made reports to the Secretary of War concerning its influence.

At the conclusion of Dr. Munson's paper, the following resolution was offered by Dr. C. A. Lindsley, of Connecticut, which was adopted:

"Resolved, That this body deplores any action in curtailing the operation of the army canteens or post exchanges, and in the interest of general and military sanitation and temperance recommends their establishment, as formerly existing in the United States."

Dr. Charles R. Greenleaf, U. S. Army, described the sanitary conditions in the Philippine Islands since the United States came into occupancy of them.

Tuberculosis.—Dr. Felix Formento, of New Orleans, La., read a paper with this title, in which he stated that in medicine a certain spirit of conservatism was required. There seemed to be nowadays too much laboratory work and not enough bedside practical instruction. While he did not deny the glorious discoveries in bacteriology, he feared that the study of man in health or disease was often sacrificed to that of the infinitesimal microbe. The observation of sanitarians had shown that heredity, as in cancer and other affections, was a powerful agent of transmission. Without hereditary predisposition, local infection would remain sterile in the great majority of cases. All debilitating causes by lowering the powers of resistance furnished a favorable nidus for the development of the tubercle bacillus. War should be waged on the bacillus, and we should try to exterminate it by all possible means, as well as to destroy the sputum; the disinfection of rooms occupied by consumptives was important, and a rigid inspection of milk and meat necessary, in spite of the claims of Professor Koch.

Dr. Jesus Chico, of Mexico, read a paper in which he detailed some observations tending to prove that the meat and internal organs of tuberculous animals brought about the appearance of tuberculosis in the persons who ate them.

The British Congress on Tuberculosis.—Dr. Frederick Montizambert, Director-General of Public Health of Canada, read a paper on this subject, in which he laid great stress on the curability of the disease, if taken in time, and all agreed in regarding human sputum as the chief medium of infection. He stated that the feature of the Congress was the address by Dr. Koch, more particularly that part dealing with the alleged non-identity of bovine and human tuberculosis, and the non-transmissibility of the disease. His (Koch's) actual words in this connection were: "Though the important question whether man is susceptible to bovine tuberculosis is not yet absolutely decided, and will not admit of absolute decision to-day or to-morrow, one is nevertheless at liberty to say that if such a susceptibility really exists, the infection of human beings is but a very rare occurrence. I should estimate the extent of the infection by the milk and flesh of tuberculous cattle, and the butter made of their milk, as hardly greater than that of hereditary transmission, and I, therefore, do not deem it advisable to take any measures against it.

"On the other hand, current view and practice of local sanitary authorities in England have been in accord with the findings of two royal commissions that 'any person who takes tuberculous matter into the body as food incurs risk of acquiring tuberculous disease.'"

Dr. Montizambert stated that the feeling throughout the Congress seemed to be that the statements of Koch were made prematurely and upon insufficient data. The position of eminent authorities who criticised Dr. Koch's announcement was essentially uniform.

After the reading of Dr. Montizambert's paper, there was a general discussion on the subject of tuberculosis.

Dr. Chico, of Mexico, read the paper of Dr. Francisco Berbaldez on *"Remarks Intended to Show the Character of Human Vaccine as a Preventive of Smallpox."*

At the Tuesday evening meeting, Mr. Ansley Wilcox, of Buffalo, delivered an address of welcome. He paid a glowing tribute of affection and respect to President McKinley, and among other things said: "When we think of the way in which the American people calmed themselves in their intense grief, and the reins of

power, dropping from lifeless hands, were taken up peacefully by the strong hands of the appointed successor, we will say again, with heartfelt joy, whatever may happen to our individual leaders, 'The Government at Washington still lives,' and towers among the nations of the earth as our electric tower amidst the beautiful buildings surrounding it."

President's Address.— By Dr. Benjamin Lee, who feelingly referred to the overwhelming grief with which the representatives of one of the nations composing the association were now stricken.

He said that among the problems with which the association had to deal was that of the protection, safety and welfare of the community against the possible infection of leprosy; that the moral leper was sometimes infinitely more dangerous than the physical leper. The anarchist was the moral leper, and it was high time that we undertook to limit the spread of this, the most horrid of all infections.

He complimented the city of Buffalo upon its condition of health and cleanliness, and expressed the wish that the association might leave with the city some lessons which would be helpful in the administration of health matters.

On Wednesday morning, September 18, reports were read of the committees on Pollution of Public Water Supplies, Etiology of Yellow Fever, and cases of yellow fever observed on the two coasts of the Mexican Republic, from September 17, 1900, to August 31, 1901.

One of the features of the meeting was a paper by Dr. Walter Reed, of Washington, D. C., on yellow fever, which was in part as follows: "We were able, under strict rules of isolation, to bring about an attack of yellow fever in ten non-immune individuals out of a total of thirteen by means of the bites of mosquitoes—the Stagomyia fasciata—that had previously been fed with the blood of yellow-fever patients during the first, second, and third days of their attacks. We were thus able to establish, in the most practical manner, that the mosquitoes serve as the intermediate host for the parasite of yellow fever. At the same experimental station we were able to demonstrate that yellow fever cannot be induced through contact with the clothing and bedding of yellow-fever patients, even though these articles had been previously thoroughly soiled with the excreta of such patients."

Dr. Reed then described in detail the mosquito which carried the infection of yellow fever, as to its history, method of propagation, habitats, breeding-places, method of generation, and measures that

should be taken to prevent them from infecting healthy individuals, and guarding the sick against bites of these insects. He said the life of this mosquito was about five days, if deprived of water, and if a voyage at sea had consumed more than that time, the mosquitoes contained in the hold of the vessel would have perished unless they had access to water or moisture, and the danger of infection lay not in the cargo or personal baggage, but in the individual sick with the disease. In 1901 there was a reduction of 83 per cent. in yellow fever in the city of Havana.

A paper was presented by Dr. A. H. Doty, Health Officer of the Port of New York, dealing with the practical methods of quarantine necessary in view of the changes in our belief in regard to the necessity of disinfection in yellow fever.

A recess was then taken until 3 P. M., at which time resolutions were adopted to the effect that every effort should be made by sanitarians to diminish the mortality of tuberculosis; that sufficient facts have not been offered by Professor Koch to prove that human and bovine tuberculosis are different diseases; that municipalities should make regulations against expectoration; that they should compel notification by physicians of cases of tuberculosis; that they should establish municipal sanatoria for the benefit of persons in families of limited means; that tenements, factories, workshops, schools and other public institutions should be inspected in order to promote cleanliness, ventilation and other sanitary conditions.

A paper was read by Dr. Gorgas, covering about the same ground as the one submitted by Dr. Reed.

A general discussion on the subject of yellow fever followed, and some of the members, among them Dr. Formento and Dr. Wasdin, dissented from the views expressed in the paper of Dr. Reed. They maintained that yellow fever was probably transmissible by fomites. However, Dr. Reed, in his closing remarks on the subject, was very sanguine of the position he had taken, and claimed that the experiments conducted in Havana were absolutely conclusive.

Several reports were submitted during the afternoon, among which was the report of the Committee on "The Relation of Forestry to the Public Health," by Professor William H. Brewer, of New Haven, Conn.; also, a report on "Bacterial Purification of Water by Freezing," by Mr. H. W. Clark, of Boston, Mass. Professor S. H. Woodbridge, of Boston, submitted the report of the Committee on "Car Sanitation."

At the session on Wednesday evening, Dr. A. Walter Suiter, of Herkimer, N. Y., read the report of the Committee on "The Cause, Prevention and Duration of Infectious Diseases."

This was followed by the report of the Committee on "Disinfectants and Disinfection," by Dr. Hibbert W. Hill, of Boston, Mass., after which there was a short discussion on them.

On Thursday, the third day of the meeting, there was no business transacted, but the president called the meeting to order at 10 o'clock as usual, at which time resolutions of sympathy and regret in regard to the death of the late President McKinley were passed unanimously by a rising vote.

Drs. William Bailey, of Louisville, and C. P. Wilkinson, of New Orleans, made short speeches on the resolutions, which were very appropriate and much appreciated, after which the association adjourned until Friday morning at 10 o'clock.

The association met Friday morning at 10 A. M. Considerable time was taken up in reading various reports, the election of officers, and the appointment of committees.

Notes on the Necessity of Attending to the Hygiene of the Mouths of Pupils of Schools.—This paper was read by Dr. Juan Brena, of Zacatecas, Mexico. The author stated that the bacillus of Koch had a predilection for the buccal cavity of the mouth, which greatly favored its multiplication. He said it had been demonstrated that whatever the form of oral sepsis might be, it was susceptible of causing all the phlegmoses connected with the local organism. Many cases of septic diseases of the mouth were due to dental caries, and to that alone.

The Influence of School Life Over Health.—A paper on this subject was presented by Dr. Frank W. Wright, of New Haven, Conn. The author said, in part, that the first principles of school hygiene were embodied in the sites for the building, construction and furniture. With proper care, natural ventilation was superior to artificial ventilation. Some of the diseases affecting children were near-sightedness, diseases of the spine, disorders of the digestive system, tonsillitis, consumption, and contagious diseases. Nervous diseases were not at all infrequent, and affected the teachers as well as the pupils. Impure air, defective light, and mental strain were the principal causes of these troubles. Many failures were due to the long hours. The exercise and refreshment taken during intermission were not of the right nature, and the lunches were sometimes made up of sweets and other indigestible food. The first great care, on the reassembling of school, was to see that all pupils were successfully vaccinated. Previous to the discovery of vaccination, smallpox killed more people than all other scourges combined. No child from a house in which a contagious disease

existed should be allowed to attend school, and any person exposed to a contagious disease should not attend school for at least two weeks after the last exposure. While whooping-cough was not particularly fatal to older and more robust children, it might be contracted at school and communicated to other members of the family. He thought it was of the greatest importance that pupils should have nothing in common, as it was well known that children with contagious diseases often attended school for several days before it was discovered that such was the case. Such diseases might be communicated by pencils, drinking cups, books and clothing. An examination of the pupils should be made daily for the prevention of contagious diseases. An examination should be made twice a year of the eyes and ears of each pupil, and outside inspection was important when children were absent from school.

Hygiene in Its Relation to the Primary School.—Dr. Guzman, of Mexico, followed with a paper on this subject, and among other things he said that aid to the physician must come from the teacher. In his belief, teachers should be trained to help the inspecting physician so as to be able to discover diseases produced by ill-directed school work, contagious diseases in the school, examination of the physical condition of pupils at the time of their entrance to school, and at regular intervals thereafter.

Cremation in Its Relation to Sanitary Legislation.—Dr. Luis G. Espinoza, of Vera Cruz, Mexico, read a paper with this title. He divided the subject into three parts: (1) The merits and demerits of cremation; (2) the establishment of hygienic regulations in cemeteries and a discussion of their respective value; (3) he concluded in favor of compulsory cremation in contagious diseases.

SECTION ON BACTERIOLOGY AND CHEMISTRY.

The Committee on Standard Methods of Water Analysis presented its report, covering especially physical, microscopic and bacteriologic examination, color, standards of comparison, odor, etc.

Dr. Stephen De M. Gage presented the results of routine determinations of Bacillus coli and the applied water and affluents of the various water filters at the Lawrence Experiment Station, and the finding of both Bacillus coli and Bacillus typhi in these waters. Bacillus coli was found in the affluents more frequently than Bacillus typhi; both germs were present in the applied. Bacillus coli is the more hardy germ of the two.

Dr. Robert Spurr Weston and A. I. Kendall referred to the water purification investigation at New Orleans, and described the

different species of bacteria found in the Mississippi River at that point, together with the various groupings and tests.

Refined Antitoxin Preparations.—Dr. Joseph McFarland was somewhat pessimistic as to the preparation of the antitoxin serums, and said that we are, nearly ten years after their invention, working along the same lines as introduced by the pioneers, having achieved nothing but an increased potency in the serums we prepare. He summed up by saying that it is desirable both to manufacturer and consumer to have antitoxic principles of the different serums separated from the useless substances with which it is associated and placed at the disposal of the clinician in a refined form.

Typhoid Infection, Its Nature and Treatment.—Dr. Eugene Wasdin says typhoid fever is no more primarily a disease of the intestine than smallpox is a disease primarily of the skin. The symptoms of lung invasion are early, those of the intestines are later. The presence of the bacillus of the blood does not seem of importance. The primary colony endangers the patient. The infection in typhoid fever is, then, in the majority of cases, not by way of the alimentary canal. Municipal hygiene should recognize the organism in the air and its entrance into the respiratory passages.

Drs. William Royal Stokes and John S. Fulton say that, although satisfactory antitoxic serum has been produced for practical use, yet no practical clinic remedy has yet been devised for any of the bacterial infections needing a bactericidal serum; that typhoid and other bacterial infections need not only a highly immune serum, but also a normal serum containing a normal element of the blood of health or the so-called alexin.

The Vitality of the Plague Bacillus in Its Relation to the Public Health.—M. J. Rosenau claims that the plague bacillus is not a frail organism. He covered the points of effect of temperature, moisture, sunlight, food products; the vitality of the plague bacillus in water, disease not water-borne, plague in cold climates and in the tropics, gaseous and chemical disinfectants for the plague bacillus. Clothing and bedding may act as fomites. *Bacillus pestis* in the male cannot live long, dying at even the body temperature; it keeps alive at 19° C. New merchandise is not apt to carry the disease. Reference was made to the life of the organism on wood, paper, sponge, wool, sawdust, cotton, crash and a variety of objects.

What Standards of Bacterial Purity of Milk Supplies Should be Prescribed by Boards of Health?—The author referred to the

large number of bacteria found in both raw and pasteurized milk in the city of New York during the summer. Milk taken under decent conditions does not average 5,000 bacteria per c.c. If kept under 50° F., it does not contain over 100,000 bacteria at the end of 24 hours. The milk of New York contains in summer over 10,000,000 bacteria per c.c. The Health Board has passed a rule requiring that milk shall be exposed at a temperature of 50° F. When the bacteria run under 30,000 and the inspectors say the conditions are good, the dealer gets a certificate from the county society. Dr. Swartz, secretary of the Rhode Island Board of Health, said that it was a difficult matter to make a standard as to how many bacteria constitute a milk that cannot be received. Anything over 500,000 should be excluded. Of most importance is the education of the public as to contaminated and adulterated milk.

The Cause of the Nonnitrification of Septic Sewage in Contact Filters.—Dr. H. W. Clark, speaking of experiments made at Lawrence, showed that it was exceedingly difficult to produce a nitrification in contact filters receiving this sewage; that it is caused by the rapid exhaustion of the oxygen in the filter at the time of the application, and that this rapidity of exhaustion varies greatly with different sewages in different stages of decomposition. Mr. Fuller spoke of the use of permanganate.

Dr. T. Madsen, of Copenhagen, read a technic paper entitled *"Antitoxins and Agglutins; Some Analogous Phenomena of the Variation of Production Arising During Active and Passive Immunization"*; followed by a *"Description of Certain Laboratory Methods,"* by Dr. F. F. Wesbrook.

"Types of Bacillus Diphtheriæ in Clinical Cases" was the title of a paper by Dr. F. F. Wesbrook, Dr. L. B. Wilson and Dr. O. McDaniel. The paper was highly technical and statistical.

There were several reports of committees, and a few papers which were not read, owing to lack of time, as there were no sessions held on Thursday; but these papers and reports will appear in the official proceedings of the association.

The following officers were elected for the ensuing year: President, Dr. Henry D. Holton, Brattleboro, Vt.; First Vice-president, Dr. Walter Reed, U. S. Army; Second Vice-president, Dr. Jesus Chico, Guanajuato, Mexico; Secretary, Dr. Charles O. Probst, Columbus, Ohio; Treasurer, Dr. Frank W. Wright, New Haven, Conn.

New Orleans, La., was selected as the place for holding the next annual meeting, but the exact date was not determined.

MEDICAL EXCERPT.

By T. P. Corbally, A. M., M. D.

Treatment of Diphtheritic Paralysis.—Dr. Ballan, in his thesis, has contributed an aid to the treatment of diphtheritic paralysis, by the use of sero-therapy. The "Gazette hebdomadaire," September 15, 1901, says he has again shown to what an extent the anti-diphtheritic serum was efficacious in all the forms of disease caused by the bacillus of Löffler; he has demonstrated its utility in attacks caused by poisonous secretions, as in cases of paralysis following local attacks of diphtheria.

These cases are the results of lesions in the nerve cells of the spine, and especially in the nerve centres; lesions due to the poison which is probably propagated by the infection being conducted through the nerve filaments.

The experiments of Prof. Ferré, conducted systematically since 1896, show clearly the origin of these accidents, and it is this experimental study of paralysis of diphtheritic origin which has enabled this author to show, in a strictly definite manner, the effects of the specific action of the anti-diphtheritic serum in the treatment of such cases.

The observations of M. Ballan are so direct that they leave no doubt as to his conviction, and must satisfy all who examine them. It is only an exact application of the conclusions of M. Ferré and of the sero-therapeutic treatment, reproduced experimentally.

These paralytic cases seem less grave, and yield more readily, when treated early with the serum, which may be used in very large doses without injury to the system, and, indeed, in the cases of Dr. Raulin and in those of Prof. Ferré, reported by Dr. Ballan, we find that doses of 200 cubic centimeters in two months have been administered, and even 140 cubic centimeters in one month. These are facts that show how necessary it is that one should be always prepared to use the serum immediately, and prove also that physicians have in this medicine a veritable specific for accidents, present or remote, produced by the bacillus of Löffler or its toxine.

While the principal object of Dr. Ballan is to show the great value of the serum as a remedy, his secondary object is to urge the immediate application of the remedy, in order to secure the best possible result.

DIAGNOSIS OF PLAGUE.—In view of the recent outbreak of plague in this country, the statement made by Barker ("American Journal of the Medical Sciences," October, 1901) that the diagnosis can be established beyond the shadow of a doubt, is of importance. When dealing with a first case, the most experienced clinician hesitates to pronounce the existence of such a disorder in the community, but if, after a careful examination of the physical symptoms, the juices from the buboes are extracted by hypodermic syringe and examined for bacteria, they will be found to exist. Likewise, the pathological appearances are absolutely characteristic in the great majority of cases. The German Government, recognizing the possibility of a quick and accurate diagnosis, has arranged for definite plague courses at certain of the bacteriological institutes, where men may be prepared for the especial study of the disease. When a suspected case is reported from any source, experts with special plague bacteriological outfits are sent at once to the place, and their report is accepted as final and acted upon immediately.

TREATMENT OF TYPHOID FEVER.—Lieut.-Col. G. Sterling Ryerson, M. D., of Toronto, later British and Red Cross Commissioner in South Africa, at a recent meeting of the Toronto Clinical Society ("Canadian Lancet"), reported that the treatment of typhoid fever was practically the treatment which is adopted in Toronto and everywhere else. Disinfection of the bowel either by means of listerine or boric acid, taken internally, or enemata, were considered in many cases to be remarkably successful. Another form of treatment was that of starvation. They were starved for seven or eight days. He considered that in some cases it might be dangerous, because a number of the men were exhausted when brought in. Nothing whatever to eat for seven days was their treatment; nothing at all except water, and all of that they could drink. The medical officer in charge of these cases, and under whose supervision this plan of treatment was carried out, informed Dr. Ryerson that he had fewer deaths than in any other hospital in Bloemfontein. Dysentery: this was another very prevalent disease, and you hear of a great many men affected with this disease when they merely had ordinary diarrhœa. Dr. Ryerson said that during his service as surgeon with the troops engaged in the suppression of the North-West Rebellion in 1885, he had observed the good effect of several drachm doses of listerine in treating camp diarrhœa and dysentery, caused by drinking the alkali water of the plains.

SECTION OF THE PNEUMOGASTRIC.—Dr. Ribera presented an interesting case to the Academia de Medicina de Madrid—the division of the pneumogastic nerve in an operation on the neck ("Progrès medical," September 7, 1901).

A tumor was removed which surrounded the pneumogastric completely; the operation was followed by no other phenomena than a slight disturbance of the pulse, with greatly increased tension, slight attacks of suffocation, and a certain bitonality of the voice. All these unfavorable conditions were removed entirely, and the author asks: "How is it possible that the section of a nerve so important could give rise to so little disturbance to the system?" He thinks that the neoplastic process of the envelopment of the nerve had slowly altered its action, and that in operating he had divided a decayed, degenerate member, which for a long time had ceased to act as a real nerve. ("Revista de medicina y cirurgia practicas," No. 681.)

INTERCRANIAL RESECTION.—The same number of the "Progrès medical," September 7, 1901, copies from the "Revista de Madrid" the history of a case in the service of Dr. San Martin, in which he describes the resection of the trigeminal within the cranium.

The case was that of a man for whom Dr. San Martin had previously resected the inferior and the superior maxillary nerves by the method of M. Kronlein. After six months, the intolerable pain returned. Notwithstanding some repugnance on his part, yet, at the instance of M. Gueadea, M. San Martin performed the intercranial section, according to the method of Krause. The operation nearly proved fatal, in consequence of the terrible hemorrhage which attended it; however, it was completed, although with difficulty, but without any other accident than the hemorrhage. The wound healed perfectly; cicatrization took place by first intention. No change followed, except a slight irregularity in the movement of the eye on the same side as the operation. Up to the present the pain has not returned.

ARTIFICIAL RESPIRATION.—As a means of successfully treating bronchitis in infants, artificial respiration has been successfully employed. Some years ago ("Gazette hebdomadaire," September 1, 1901, a German military surgeon, Doctor Heermann, attended a child, six months old, suffering with a very severe attack of bronchitis, that resisted all the usual means of treatment, and which soon presented all the symptoms of asphyxiation, with a pulse 160,

and breathing 80 in the minute. The end seemed to be near at hand when the doctor, deeply interested in the case, resolved to practice artificial respiration.

After having himself made artificial respiration, at intervals, for two hours, by compression on the base of the thorax, and used the manual treatment of Schultze, and having by this means succeeded in warding off the immediate danger, M. Heermann advised the parents of the little child to continue the artificial respiration by compressing the false ribs at intervals during two days, making the intervals gradually longer, and the child's life was saved.

Since that time, our confrère has employed artificial respiration systematically in all cases of bronchitis, or of broncho-pneumonia, in children, and not only in cases of threatened asphyxia, but from the beginning of the affection. While the usual internal medicines are used, and the usual hydrotherapeutic measures are employed, he directs the employment, several times a day, for about half an hour each time, of artificial respiration, with the hand applied lightly over the floating ribs, thus pressing the base of the thorax with each act of expiration.

Some children at first oppose this by restlessness and contortions, but if gentleness be used, they soon become accustomed to it; others find from the first so much relief from this treatment, which assists the muscles of expiration when they become more or less fatigued. In general, under the influence of artificial respiration, the breathing becomes deeper and fuller, and the number of respirations is materially diminished. It is evident, also, that the inhalation of oxygen can be employed very advantageously in some cases with the movements of the chest, and while it does not interfere with respiration, may exert a very favorable effect on the action of the heart.

Let it be remembered that artificial respiration, combined with other forms of mechanical therapeutics, as massage of the whole body, the horizontal position, etc., has given excellent results in the later stages of broncho-pneumonia in children, and has been employed by a Swiss physician, M. le Docteur Freuthardt. ("Sem. Med.")

UNGUENTUM CREDÉ.—Dr. F. Daxenberger, of Regensburg ("Klinisch-therapeutische Wochenschrift," Vienna, May 12th, 1901), reports the successful treatment of three cases of meningitis by the inunction of unguentum credé. "I have employed it," he says, "in the most varied infectious diseases, erysipelas, phleg-

mon, lymphangitis, furunculosis, periostitis, suppurations of the accessory cavities of the nose, recurrent endocarditis, rheumatism, and infectious eye diseases, such as corneal ulceration with hypopion, threatened panophthalmitis, etc., but in no affections have I obtained such decisive results as in meningitis, more especially in children. Of fifteen cases of the kind treated with mercurial ointment, calomel, and the iodide of potassium, as well as hydropathic measures, only one survived; whilst all of the three last, treated with the unguentum credé, recovered. The diagnosis was made as carefully in the one set of cases as in the other; neither were these latter less serious or of better prognosis. . . . Tubercular meningitis cannot be positively excluded in any of the three cases; experience teaches that 80 per cent. of all meningites of children are of that variety.

"The effects of the treatment were throughout remarkably good, and I do not think that it can be ascribed to any other agent than to the unguentum credé that was employed. Almost every one of the other cases terminated fatally under the usual medicinal and other treatment. I therefore believe that a certain specific action is to be ascribed to the unguentum credé in meningitis, both of the ordinary and the tubercular form.

"As regards the method of its employment, from 2 to 3 grams (30 to 45 grains) at a dose, in accordance with the age of the patient and the severity of the case, were inuncted in the same way that mercurial ointment is employed, at first twice and then once a day. Altogether some 10 to 20 grams (2 1-2 to 5 drams) were usually sufficient. I do not think it wise to apply the ointment directly to the patient's head, neck, or trunk, if only on account of the pain thereby entailed. I prefer to employ the four extremities in turn.

"The chief condition of success lies in the correct employment of the ointment, and want thereof seems in many cases to be dependent upon its improper use. The quantity employed must be suitably warmed, and then be thoroughly inuncted. Almost every trace of the salve must be made to disappear, and this takes at least a quarter of an hour. The nurse must be shown how to make the first inunction, or at all events it must be watched; mere dependence upon the attendant's statements is liable to be the cause of unintentional deception. A mild dermatitis is no indication for stopping the course of inunctions. I have never encountered any intoxication symptoms.

"It is possible, of course, that the procedure here recommended

may occasionally not give the desired result; but the silver ointment is certainly worth a trial in hopeless cases, and the purpose of this paper is to encourage its employment."

PROPHYLAXIS OF BLINDNESS.—M. Pinard, having studied the causes and the treatment of ophthalmia in new-born children ("Le Progrès Médical," July 20, 1901), caused the following resolutions to be adopted by the Academy:

"The Academy of Medicine, with the view to diminish the number of the blind, think it advisable to give to midwives a circular recommending a regular prophylactic treatment, and to ask of the public authorities to cause all the mayors and heads of departments:

"1. To cause a notice indicating the causes, the symptoms and the dangers of ophthalmia in new-born infants to be distributed in all the departments, together with the certificate of birth;

"2. To take such measures as may be necessary to have a report of all purulent ophthalmias, as transmissible diseases, regularly made by the midwives or doctors in attendance.

"3. That to all the lying-in hospitals, clinics for children's diseases and maternities, an ophthalmologist be attached to treat all cases of purulent ophthalmia and to instruct students and midwives to apply the proper remedies in all cases in which they may be needed."

A METHOD OF TREATING CHOREA.—M. Stuggha, of Lille, claims to have successfully treated patients suffering with chorea ("Gazette Hebdomadaire," August, 1901), by the immobilization of the limb in a special apparatus.

The patient should be put under the influence of chloroform and massaged before being immobilized. The author of this communication thinks that the cure depends much on the impression thus made on the individual. "The patient," he says, "no longer sees his limbs. He forgets to move them, and for that reason care should be taken to place the patient under proper restraint when the persistence of the movements cannot be otherwise controlled.

This treatment is harmless and can be applied in all cases and in all conditions.

"SIMILAR TO THE EFFECT OF SUNLIGHT."—Dr. L. P. Hammond, in a description of the physiological chemistry of antikamnia ("Medicus," May, 1901), says: "It exhibits analgetic, anti-

periodic, antipyretic and antiseptic functions, similar to the effect of sunlight, though differently expressed. However, with antikamnia, this latter function is materially aided when combined with other well-known drugs, such as quinine and the milder laxatives. The ideal combination I have in mind may be obtained in laxative antikamnia and quinine tablets. These tablets, administered in doses of one or two, and repeated every one or two hours, are a perfect antiperiodic in malaria, and a perfect reconstituent tonic—an expression of solar life, light and energy in malarial anæmia."

TREATMENT OF ECZEMA.—Ecthol exerts a decided influence on eczema ("American Journal of Dermatology and Genito-Urinary Diseases"), and can be used to advantage in several different conditions. In cases of moist and inflamed lesions, with great soreness and irritation, it may be given in teaspoonful doses; and the more markedly the eruption is purulent the more decided the effect. It may also be used with manifest advantage when the patches are greatly infiltrated and the inflammation is sub-acute in character.

SHE USED THE WRONG BOTTLE.—During a recent thunderstorm at Paterson, N. J., a Mrs. William Donohue jumped out of bed, and getting what she supposed was a bottle of holy water, sprinkled the sleeping members of her family. When they awoke in the morning and saw themselves in a mirror, they were startled by their streaked faces. The woman, in the dark, had picked up by mistake a bottle of bluing.—*The Argonaut.*

SOAPS.—Information given by W. J. Teeters ("Amer. Druggist," June 10, 1901), concerning the manufacture of soaps and the various trade names for the several varieties, should prove of interest, not only to the druggist, because it is that kind of popular science in which the druggist is frequently appealed to for information, but to everybody.

The soft soaps of the present day are, as a rule, not made from potash, but from soda, and are soft only because of the surplus water incorporated in them. They are known as "Swiss soaps," or "settled soft soaps," and contain from 33 1-3 to 90 per cent. of water. Most of the soaps of the market are made by saponifying oils with an alkali, precipitating the soluble soap thus formed by

adding solution of sodium chloride, removing, drying and manipulating the soap thus formed.

Curd soaps are made by melting the precipitated soap, adding more lye to emulsify any unsaponified fat carried down in the salting-out process, boiling and running into frames or moulds. Curd soap has almost invariably an excess of alkali, to eliminate which the process of "fitting" is resorted to. This consists in allowing the curd soap to stand for some time after boiling, pumping off the lye, introducing steam, and, if necessary, water; boiling and allowing it to cool slowly for several days, when the whole separates into layers—the bottom, containing the precipitated impurities, known as negur; the top layer, consisting of a frothy crust, known as fob, while the semi-liquid soap floats between the two.

Toilet soaps, at least "stock soap," being made by the process outlined above, is cut into very thin slices, thoroughly dried, mixed with perfume and coloring matters by grinding in a mill, and then pressed into the desired shape. The transparent soaps of the best class are made by dissolving the dry stock soap in alcohol, with the addition of a small amount of glycerin, and allowing to set. Cane sugar acts somewhat like glycerin by aiding clarification, but its use is open to serious objection, as it has a very bad effect on the skin. The soap that floats is made by beating up the molten soap so as to incorporate a large number of air bubbles.

Powdered soap, or soap so made, and out of pure material, possesses the special advantage of quick solubility, and, for laundry purposes, more thorough penetration, and, consequently, proportionally superior cleansing properties. Of one variety, at least, in this regard, we have long since had practical knowledge of its superiority to any hard soaps with which we are acquainted, and particularly for cleansing flannels—Pyle's Pearline. Moreover, of soap powders generally, the "American Soap Journal" says:

"The use of a soap powder is one of the greatest conveniences of a modern housewife; it is ever ready; a little powder put in the water, and all is ready. A good powder will give a fine suds, and the ease of washing is improved ten-fold. It is, therefore, apparent that this radical departure from the use of common soap is not from the fact that its use has departed, but rather that its impurities are being made manifest, and the superior utility of a good powder is being emphatically brought forth.

"The utility of a soap powder to the consumer is what has made its marketable qualities so effective, and the inability of the user to

discriminate the poor from the good quality has made the opportunity to put so many inferior grades on the market."

Soap powder is, above all, commendable for the apothecary and nursery, for the cleansing of bottles, nipples, and tubes. And for physicians, as a convenient lubricant for the hands, a bottle of soap powder in the wallet serves to fulfil the two-fold purpose, lubrication and easily cleaned hands.

No matter what the kind or form of soap, any that is not completely soluble in pure water is not only defective in cleansing properties, but contributes to uncleanliness. Most of all, soaps that are made of the omnium-gatherum of the soap fat men. Microbes are not good soap-making material from any source whatsoever. And those that are compounded of the compost fats in which microbes abound are but partially soluble, give muddy suds, with a sedimentious deposit in the texture, or on the surface, of whatever is washed with them; they should not be used.

On the contrary, those that are compounded of clean vegetable oil and pure alkali, in accurately adjusted proportions, are thoroughly soluble. Such soaps make a clean and approximately translucent suds, which leaves no sediment after rinsing.

FATIGUE IN ARMY HORSES.—The "Anales de Sanidad Militar," of Buenos Aires, Julio, 1901, says that very good results have been obtained from the use of sugar to overcome the great fatigue in horses when overworked.

The horses employed in the service of the National Military College in transacting the business of the Establishment, are exposed, during the rainy season, to great strain and consequent exhaustion, in consequence of the bad condition of the roads and the increased amount of transportation due to certain conditions then prevailing.

For this reason, many horses, in past years, have succumbed to the excessive strain, very many became sick, pathogenic microbes found in the prevailing conditions favorable fields for their development, and fatigue caused great loss of appetite, loss of flesh, pulmonary lesions, cardiac disturbance, nervous trouble, etc.

The good results obtained by military surgeons from the use of sugar in large doses in forced marches led me to employ it for the purpose of overcoming great fatigue in the horses employed in my service.

The favorable reception given to my suggestion by my superiors encouraged me to experiment with great freedom, and I was able to give to horses that were subjected to great strain 200 grains of

sugar daily, mixed with their food, and distributed regularly throughout the day.

The results obtained have surpassed my expectation, for not only has the fatigue manifested by the horses in this service disappeared, but many of the animals, until the present useless in consequence of their miserable physical condition, have recovered their normal strength, and are now rendering good service.

Although this experiment has not the force of a prolonged test, I deem it advisable to publish it because I think that in certain cases sugar is destined to yield important service as a special agent, to supply strength that has been exhausted by excessive exertion.

JARGE KRYEMBIELH,
Veterenario de Ira Clase.

Hospital Militar, Junio 27, 1901.

AN ACT TO PREVENT THE SUBSTITUTION OF ANY DRUG IN FILLING PHYSICIANS' PRESCRIPTIONS BY DRUGGISTS IN TENNESSEE.

SECTION 1.—Be it enacted by the General Assembly of the State of Tennessee, That it shall be unlawful for any corporation, firm or person, or any combination or association of corporations, firms or persons engaged in the business of buying, compounding and selling drugs and medicines, to substitute any drug or medicine in lieu of or instead of that given to the patient by the physician on the face of his prescription.

SEC. 2.—Be it further enacted, That it shall be unlawful for any agent or employee of such person, firm or corporation engaged in the business of buying and selling drugs in this State, to substitute any medicine for the specific medicine mentioned in the physician's prescription.

SEC. 3.—Be it further enacted, That any person, firm or corporation violating the provisions of this act, or aiding or abetting the violations of the same, shall be guilty of a misdemeanor, and upon conviction shall be fined not less than $25 nor more than $100 for each and every offense.

SEC. 4.—Be it further enacted, That this act take effect from and after its passage, the public welfare requiring it.

Approved April 3, 1901.

BENTON MCMILLIN, Governor.

E. B. WILSON, Speaker of the House of Representatives.

NEWTON H. WHITE, Speaker of the Senate.

A true copy, JOHN W. MORTON, Secretary of State.

EDITOR'S TABLE.

SANITARIAN, NOVEMBER, 1901.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton St., Brooklyn, N. Y.

PUSILLANIMOUS OFFICIALISM.

The aldermen of Somerville, Mass., being apparently able to live on the income of their office, a few months ago adopted a resolution condemning the action of the Board of Health for authorizing the city physician to attend and render a bill for professional services in a case of smallpox, and that, too, though the city physician had vainly endeavored to procure the services of some other physician to attend the case.

The case is cogently stated by the subsequent action of the Board of Health, asserting its right and duty, and condemning the action of the aldermen for refusing to pay the city physician the sum of $300 for the time he attended William A. Darrah, a smallpox patient of the city.

A similar communication has never before been received by any board of aldermen of the city from what is considered a co-ordinate branch of government. It is as follows:

Health Board's Document.—Whereas, by the recent action of the board of aldermen in refusing to pass the order, as reported favorably by the Committee on Finance, providing for the payment of compensation to Dr. Arthur R. Perry for the professional services rendered by him in connection with the recent smallpox case of William A. Derrah, gross injustice has, in the opinion of this board, been done in this particular instance; and,

Whereas, such services were rendered by Dr. Perry at the request of this board, made in an emergency which, in the opinion of this board, required immediate action to protect the health of the citizens of Somerville; and

Whereas, such request was made with the express assurance to Dr. Perry by this board that he would receive extra compensation for attending said case of smallpox, and his honor the mayor being immediately afterward advised of the same; and

Whereas, Dr. Perry, after unsuccessful efforts on the part of this board to procure the services of any other competent physician, even for twice the amount called for by said order, rendered such

services with efficiency and at the sacrifice of his private practice and at no small personal risk, and

Whereas, such action on the part of the board of aldermen is directly opposed to the action of a former board of aldermen, whereby the same extra compensation per week as that required by said order was unanimously granted for similar services under similar circumstances, and whereby a precedent was established, and

Whereas, in the opinion of this board, the ability of this board to cope with similar emergencies in the future, and efficiently to protect the health of the community and the welfare of the city, would be seriously threatened and impaired by the destruction of such a precedent, therefore,

Resolved, That the board of aldermen be requested, and they are hereby requested, to take such steps as will secure the earliest possible adoption of the above-mentioned order, as lately reported favorably by its Committee on Finance.

A case of the same character has recently come to our knowledge, but meaner, because the official interposition was by a high-salaried health commissioner, against the collection of a bill by one of the employees of the health department of which the commissioner is a member, for professional services in a case of smallpox, because, the commissioner said, the patient was a friend of his, and Dr. X—— (the employee) had no right to render a bill for his services. Yet Dr. X—— was requested to attend the case on the special recommendation of the family physician, who, when called at the beginning of the case, on discovering it to be smallpox, declined attendance, and, as stated, recommended Dr. X——, to the entire satisfaction of his patron, and relinquished the case, with the distinct understanding that Dr. X—— was to render a bill for his services. The patient recovered. A bill was rendered by Dr. X—— (one about half as large as Dr. Perry's, justified by the Somerville Department of Health), to which no exception was taken, the debtor being a man of abundant means, until Commissioner Q—— gave him to understand that, as a friend of his, Dr. X——, being an employee of the health department, had no right to render any bill for professional services—that, in substance, Dr. X——'s professional services wholly belonged to the health department, controlled in part by Commissioner Q——, but could be disposed of as personal perquisites to his (the commissioner's) friends.

The common sense suggestion to Dr. X—— is, of course, sue for the amount of your bill, expose the pusillanimity of the

health commissioner, and collect your due. But the commissioner holds his office by virtue of his usefulness to the political party to which he belongs; Dr. X—— holds his under Civil Service rules, subject to such limitations as the department may see fit to fix. Dr. X——'s salary is not much, but considerably more important to him than his fee in this case. Besides, his dismissal from office, which would be certain to follow any act of his calling in question the conduct of a member of the department, would destroy his advantage for his future by remaining in good standing under the Civil Service rules, which would be annulled. Our advice is: Wait. Your bill will hold good probably longer than Dr. Q——'s commission.

THE MARINE HOSPITAL SERVICE IGNORED.

At the recent meeting of the American Public Health Association, Medical Director A. L. Gihon, U. S. Navy, in complimenting the National Departments of Health of Canada and Mexico, took occasion to state, in substance, that the United States was wholly devoid of any national health service. It is not complimentary to Dr. Gihon's knowledge of the work of the Marine Hospital Service, to suppose that his prejudice against it has so affected him with purblindness as to preclude knowledge of the effective aid of the Marine Hospital Service to the several States in the suppression of smallpox; of its efficacy in preventing the introduction of yellow fever, where it has had control, and in stamping it out in the Gulf States, under different conditions; of its service in preventing the introduction and spread of the plague; of its excellent laboratory work in Washington, with reference to the water supply there and elsewhere, and of its recently instituted measures for the study of yellow fever and its possible relation to fomites and quarantine.

What Dr. Stephen Smith said of the original purpose of the Marine Hospital Service a hundred years ago is familiar to all students of sanitation in this country, as should be also the progress that service has made during recent years as an authorized national sanitary service, by act of Congress, for co-operation with every State sanitary organization in the country, whenever and wherever its services are required.

THE NEW YORK WATER SUPPLY.

The Merchants' Association's urgency for municipal ownership is in accord with Mr. Guernsey's article on "Taxation of Water

and What Municipal Ownership Has Done and What It Should Do," in the October number of THE SANITARIAN. It is the most thoroughly comprehensive consideration of the subject hitherto published, and merits the consideration of all municipal authorities.

"SIN WILL PLUCK ON SIN."

A writer in "The Spectator" recently, in attempting to account for the recent acceptance of "Christian Science" by a considerable number of well-to-do and nominally intelligent men and women of England, says that before the craze passes, as it is sure speedily to do, note should be taken of how symptomatic it is of two present-day feelings—"the intense wish for a new creed and the intense intolerance of bodily suffering." His remarks on the second of these points are interesting and suggestive. "There must be," he says, "some new horror of sickness creeping into the world, stimulating the energies, no doubt, of sanitary inspectors, but also debilitating the old patience and fortitude which lie at the very root of human strength. We believe this to be a marked feature of our day, and can, we think, dimly perceive its cause. As in modern civilization other dangers are vanishing, and men—and more especially women—lead protected, not to say padded, lives, their minds fasten on the one danger, sickness, which still threatens all; they exaggerate its horrors, and at last come to the idea which we seem to see running through the whole structure of Christian Scientism, that sickness must in some way be sin, or, at all events, a product of sin." We have called this interesting and suggestive, but reflection hardly sustains the theory that the desire for health is any stronger now than it was in the past. The new repugnance for the infliction of pain on men and animals has, indeed, been ascribed in part to a new sensitiveness, not less physical than mental, but healing miracles hold an important place in many, if not all, systems of religion, and not less frequently in those of remote than in those of comparatively recent origin. Human nature seems to be now much the same as it always was, or at least as it has been since it began to leave records of its emotions. There is nothing new in "Christian Science," and its success is not a bit more remarkable than that of the closely allied "green goods game."

MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

MORTALITY STATISTICS—CENSUS REPORT FOR 1900.

The statistics show that death from all the principal diseases shows a decrease since 1890, the most notable being in consumption, which decreased 54.9 per 1,000.

W. A. King, chief of the Vital Statistics Division, says:

"The most important feature of the results presented is found in the decrease in the general death rate in the registration rate of 1.8 per 1,000 population, a decrease of nearly 10 per cent., and the decrease in the rates from the particular diseases to which the general decrease is due.

"The effect of the advances made in medical science and sanitation, and in the preventive and restrictive measures enforced by the health authorities, is still more strikingly shown in the comparative rate for the registration, cities of the country taken together.

"In 1890 the death rate in 271 registration cities of 5,000 or more population was 21 per 1,000; in 1900 the rate was 18.8 per 1,000; in 341 cities of 8,000 population and upward, a reduction of 2.4 per 1,000. The gross population of the cities comprehended was 14,958,254 in 1890, and 21,660,031 in 1900.

"The entire significance of these figures can be properly weighed only when the rates for the individual cities are considered in connection with known conditions of local improvement in sanitation and health regulations—factors which are not of a statistical nature, and which were not developed by the schedules.

"The decrease in the general death rate and in the rates due to diseases most frequent in the early years of life, on one hand, and the increase in the rates due to those diseases occurring generally at advanced ages, on the other hand, mean also increased longevity.

"The average age at death in 1890 was 31.1 years; in 1900 it was 35.2 years.

"The total number of deaths reported in 1900 was 1,039,049; in 1890 it was 841,419. The increase was therefore 197,675, or 23.5 per cent. As the percentage of increase in the population was but 20.7, this indicates a more complete return of deaths than in 1890.

"The record of deaths upon which these statistics are based was obtained from two different sources, namely, the return by the enumerators of deaths reported to them at the decennial enumera-

tion, and the registration record of deaths recorded under local laws and ordinances."

The registration area includes Connecticut, District of Columbia, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Rhode Island and Vermont, with the cities therein, and many cities in other States.

In the registration area the death rate is given in figures showing percentages, but such figures are not given for States which make no official registration of deaths. Here are the percentages for some of the registration States for 1900 and 1890, respectively:

	1900.	1890.
Connecticut	17.0	18.6
Cities	17.0	20.9
Rural	16.9	17.0
District of Columbia	22.8	23.7
Maine	17.5	....
Cities	20.5	....
Rural	16.9	....
Massachusetts	17.7	19.3
Cities	17.9	19.9
Rural	17.1	17.2
New Hampshire	18.0	18.2
Cities	18.8	18.9
Rural	17.5	17.9
New York	17.9	19.6
Cities	19.2	23.2
Rural	15.2	13.2

Among the cities with a population above 100,000, these death rates for 1900 and 1890, respectively, are shown:

	1900.	1890.
Washington	22.8	23.7
Boston	22.8	23.4
Fall River	22.4	23.2
Worcester, Mass	15.5	18.0
Detroit	17.1	18.7
Buffalo, N. Y	14.8	18.4
Providence	19.9	21.1
San Francisco	20.5	22.5
Denver	18.6	23.0
Chicago	16.2	19.1
New York	*20.4	25.3
Indianapolis	16.7	17.3

Louisville	20.0	20.1
New Orleans	28.9	26.3
Baltimore	21.0	22.9
St. Paul	9.7	14.9
Kansas City	17.4	17.3
St. Louis	17.9	17.4
Cincinnati	19.1	21.0
Philadelphia	21.2	21.3
Pittsburg	20.0	20.1

*Estimated.

Portland, Ore., with a death rate of 9.5 per thousand, shows the lowest mortality, and Shreveport, La., with 45.5, the highest.

The decrease of mortality in other exceptionally prevalent diseases besides consumption, as above stated, 54.9 per cent.; debility and atrophy, 43.1; diphtheria, 34.7; cholera infantum, 31.9; bronchitis, 26.1; convulsions, 23.2; diarrhœal diseases, 19; croup, 17.8; typhoid fever, 12.5; diseases of the brain, 12.3; malarial fever, 10.4.

Increase: Pneumonia, 5; premature birth, 8.5; old age, 9.1; cancer, 12.1; heart disease, 12.2; apoplexy, 17.6; influenza, 17.7; kidney diseases, 24.0 per cent.

In the registration are the 15 principal causes of death, with the rate per 100,000, as follows: Pneumonia, 191.9; consumption, 190.5; heart disease, 134.0; diarrhœal diseases, 85.1; kidney diseases, 83.7; apoplexy, 66.6; cancer, 60; old age, 54; bronchitis, 48.3; cholera infantum, 47.8; debility, 45.5; inflammation of brain and meningitis, 41.8; diphtheria, 34.4; typhoid, 33.8; and premature birth, 33.7.

NEW YORK.—Bulletin of State Department of Health reports for August: Population, 7,268,000; total deaths, 10,999; death rate, 17.7; deaths under five years, 4,339; percentage of deaths under five years to total deaths, 40.0; from zymotic diseases per thousand, from all causes, 285; from cerebro-spinal meningitis, 43; typhoid fever, 168; malarial diseases, 36; smallpox, 40; scarlet fever, 49; measles, 40; erysipelas, 9; whooping cough, 80; croup and diphtheria, 142; diarrhœal diseases, 2,555; acute respiratory diseases, 509; consumption, 1,078; puerperal diseases, 81; diseases of digestive system (not diarrhœal), 693; urinary system, 629; circulatory system, 831; nervous system, 993; cancer, 411; accident and violence, 683; old age, 361; unclassified, 1,568.

City of New York, 3,526,517: Total deaths, 6,269; death rate,

20.8; deaths under five years, 3,082; from cerebro-spinal meningitis, 23; typhoid fever, 76; malarial diseases, 24; smallpox, 35; scarlet fever, 43; measles, 33; erysipelas, 5; whooping cough, 38; croup and diphtheria, 88; diarrhœal diseases, 1,785; acute respiratory diseases, 376; consumption, 632; cancer, 350. For the four weeks ending September 28: Typhoid fever, 485 cases, 95 deaths; smallpox, 22 cases, 10 deaths.

Borough of Manhattan, 1,873,562: Total deaths, 3,223; death rate, 20.2; deaths under five years, 1,591; from cerebro-spinal meningitis, 15; typhoid fever, 36; malarial diseases, 7; smallpox, 3; scarlet fever, 18; measles, 10; erysipelas, 5; whooping cough, 21; croup and diphtheria, 48; diarrhœal diseases, 841; acute respiratory diseases, 194; consumption, 319; cancer, 101.

Borough of the Bronx, 222,124: Total deaths, 423; death rate, 23.0; deaths under five years, 126; from cerebro-spinal meningitis, 1; typhoid fever, 4; malarial diseases, 4; smallpox, 30; scarlet fever, 1; measles, 1; whooping cough, 2; croup and diphtheria, 7; diarrhœal diseases, 81; acute respiratory diseases, 12; consumption, 91; cancer, 11.

Borough of Brooklyn, 1,209,064: Total deaths, 2,158; death rate, 21.0; deaths under five years, 1,081; from cerebro-spinal meningitis, 1; typhoid fever, 30; malarial diseases, 8; smallpox, 2; scarlet fever, 21; measles, 22; whooping cough, 12; croup and diphtheria, 31; diarrhœal diseases, 701; acute respiratory diseases, 139; consumption, 183; cancer, 55.

Borough of Queens, 162,834: Total deaths, 302; death rate, 21.7; deaths under five years, 145; from typhoid fever, 4; malarial diseases, 5; scarlet fever, 2; whooping cough, 2; croup and diphtheria, 2; diarrhœal diseases, 93; acute respiratory diseases, 23; consumption, 32; cancer, 3.

Borough of Richmond, 68,933: Total deaths, 163; death rate, 27.8; deaths under five years, 99; from typhoid fever, 2; scarlet fever, 1; whooping cough, 1; diarrhœal diseases, 69; acute respiratory diseases, 9; consumption, 7; cancer, 6.

Albany, 94,151: Total deaths, 134; death rate, 16.8; deaths under five years, 27; from typhoid fever, 3; croup and diphtheria, 2; diarrhœal diseases, 14; acute respiratory diseases, 5; consumption, 15; cancer, 5.

Syracuse, 108,374: Total deaths, 130; death rate, 14.0; deaths under five years, 36; from typhoid fever, 2; measles, 1; whooping cough, 1; diarrhœal diseases, 21; acute respiratory diseases, 8; consumption, 15; cancer, 15.

Buffalo, 352,387: Total deaths, 551; death rate, 18.5; deaths under five years, 226; from cerebro-spinal meningitis, 5; typhoid fever, 18; measles, 1; whooping cough, 10; croup and diphtheria, 5; diarrhœal diseases, 148; acute respiratory diseases, 32; consumption, 45; cancer, 26.

Rochester, 162,608: Total deaths, 171; death rates, 12.5; deaths under five years, 41; from cerebro-spinal meningitis, 4; typhoid fever, 3; whooping cough, 2; croup and diphtheria, 2; diarrhœal diseases, 29; acute respiratory diseases, 6; consumption, 14; cancer, 14.

ALABAMA.—State Board of Health Report (abstract from "Transactions of the Medical Association," the same being the State Board of Health), 1901: Smallpox and scarlet fever are reported to have been unusually prevalent, the former as it has been for the past four years, and likely to so continue, the Committee on Public Health reports, "until the State gives us the legislation necessary to exterminate it." Diphtheria also occurred in many localities, but had no extensive prevalence. Cases respectively reported: Smallpox, 307; diphtheria, 24; scarlet fever, 35. "The work of collecting vital and mortuary statistics has been attended by much the same results as for several years past"—nothing of consequence.

"But one remedy can be applied, and that is for the Legislature to enact a law making it mandatory on the commissioners of the several counties to appropriate adequate salaries for their health officers."

The board submits in considerable detail the contention of the State Health Officer, by authority of the board, against a bill to enlarge the powers of the Marine Hospital Service; the inauguration of efforts to improve the sanitary condition of the prisons and poor-houses of the State; to increase the appropriation for the execution of the health laws of the State; to provide salaries for county health officers; to amend the State quarantine law, under the jurisdiction of the Board of Health of Mobile County; and opposition to the transfer of Dry Tortugas to the National Government for naval purposes, because it is most needful as a Gulf of Mexico refuge station for infected vessels.

CALIFORNIA.—San Francisco, 360,000. Report for July: Total deaths, 530; death rate, 17.66; from cerebro-spinal meningitis, 3; typhoid fever, 5; buconic plague, 1; whooping cough, 4; diph-

theria, 3; diarrhœal diseases, 8; acute respiratory diseases, 30; consumption, 44; cancer, 15.

COLORADO.—Denver, 150,000. Report for August: Total deaths, 187; death rate, 14.96; deaths under five years, 44; from typhoid fever, 9; scarlet fever, 2; whooping cough, 2; croup and diphtheria, 3; diarrhœal diseases, 15; acute respiratory diseases, 5; consumption, 35; cancer, 8. Typhoid fever ("Denver Post," September 10) fills the County Hospital. Most of the cases are of persons returning home from the country.

CONNECTICUT.—The State Board of Health Bulletin reports for August: Total deaths in 168 towns, with an aggregate population of 908,355, 1,310; death rates, 18.5 for the large towns, 13.8 for the small towns, and 17.3 for the State; deaths under five years, 500; from cerebro-spinal meningitis, 6; typhoid fever, 29; malarial fevers, 15; scarlet fever, 1; whooping cough, 15; croup and diphtheria, 14; diarrhœal diseases, 339; acute respiratory diseases, 51; consumption, 105. *Typhoid fever* ("Palladium," October 9) prevalent in New Haven; 42 cases reported in September.

DISTRICT OF COLUMBIA, 278,880. Report for four weeks ending September 28: Total deaths, 447; death rate, 18.9; deaths under five years, 116; from typhoid fever, 26; scarlet fever, 8; malarial fever, 5; whooping cough, 13; croup and diphtheria, 14; diarrhœal diseases, 36; acute respiratory diseases, 21; consumption, 48; cancer, 13.

DELAWARE.—Wilmington ("Republican," September 19): Typhoid fever is being reported every day, and at present there are probably 100 cases in the city. It is not limited to any one locality in the city, but extends over its entire limits.

RIVER POLLUTION AND THE CHICAGO DRAINAGE CANAL.

To the Editor of THE SANITARIAN:

The Chicago River now receives, as it has for several months past, between three-fourths and four-fifths of the entire sewage of the city of Chicago. This sewage flows into the Illinois River via the main channel and the Illinois and Michigan Canal.

The above few lines of facts, devoid of all unnecessary verbiage, serve as a complete answer to the absurd statements made by Gor-

don H. Nott, of Chicago, in the "Inter-Ocean," of that city, which statements are based entirely upon the indefensible hypothesis that probably not fifteen per cent. of the sewage enters the drainage canal.

JAMES A. EGAN,
Secretary Illinois State Board of Health.

SPRINGFIELD, Ill., Sept. 18, 1901.

INDIANA.—The Secretary of the State Board reports for September: Deaths, 2,825, a rate of 13.6, 107 less than for the preceding month, and 296 less than for the corresponding month of 1900. Deaths under 1 year of age, 465; from 1 to 5, inclusive, 294, and 65 and over, 657. Deaths from tuberculosis, all forms, 296; from typhoid fever, 188; diarrhœal diseases, 356; diphtheria, 36; scarlet fever, 4; whooping cough, 16; pneumonia, 73; cerebro-spinal meningitis, 17; influenza, 4; puerperal fever, 7; cancer, 105; violence, 113.

Cities: All the cities in the State, having a population of 847,302, report 1,052 deaths; death rate, 15.1, .4 less than for the preceding month, a decrease in the rate of .4. The number of deaths classified according to important ages in the cities was, under 1 year of age, 221; 1 to 5, inclusive, 89; 65 and over, 219. This is an improvement over the preceding month, and also the corresponding month in 1900.

The country deaths numbered 1,773; death rate, 12.9, 2.2 less than the city rate. The death rate from pulmonary tuberculosis in the country was 121.3, and for the cities 141.1 per 100,000. The typhoid rate for the country was 98.6; cities, 76.3; the diphtheria rates, rural and urban, were 12.4 and 27.3 respectively. The diarrhœal rates were: Rural, 177.6; urban, 162.7.

IOWA.—Davenport, 40,000. Report for August: Total deaths, 49; death rate, 16.6; deaths under 5 years, 12; from scarlet fever, 1; diarrhœal diseases, 11; acute respiratory diseases, 1; consumption, 43.

KENTUCKY.—Louisville ("Courier-Journal," September 4), Dr. M. K. Allen, Health Officer, reports for the year 1900, population, 215,000: Deaths, 3,497; death rate, 16.2; of the white population, 11.9; colored, 43.4. Prevailing causes: Tuberculosis, 462; pneumonia, 290; heart diseases, 291; inanition, 163; nephritis, 126; typhoid fever, 121; paralysis, 105; cancer, 102; bronchitis, 95;

meningitis, 89; convulsions, 82; apoplexy, 78; asthma, 66; uræmia, 62; entero-colitis, 58; diphtheria, 50; la grippe, 50. Of *smallpox*, there were 75 cases, with two deaths. With reference to *consumption*, compared with smallpox, the public insists upon the establishment and maintenance of the pesthouse for the isolation of smallpox suspects and patients, yet consumption is as 50 to 1 compared with smallpox in its deadly effects. Notwithstanding this fact, legislative authority allows sufferers from consumption to spread the disease, without an effort either to isolate them or to compel them to protect others.

Of *public baths*, after a long, persistent effort, the city of Louisville is at last to have at least one public bath-house, thus putting us in line, at least in this respect, with all other progressive cities of both this country and Europe.

LOUISIANA.—New Orleans, 300,000 (80,000 colored). Report for August: Total deaths, 457 (172 colored); death rates, white 15.5, colored 25.8, total 18.2; deaths under 5 years, 123 (35 colored); from typhoid fever, 15; malarial diseases, 1; whooping cough, 2; croup and diphtheria, 2; diarrhœal diseases, 34; acute respiratory diseases, 23; consumption, 51; cancer, 14.

MARYLAND.—Baltimore, 518,000. Report for August: Total deaths, 893; death rate, 20.0; deaths under 5 years, 357; from cerebro-spinal meningitis, 1; typhoid fever, 21; malarial diseases, 1; whooping cough, 7; croup and diphtheria, 4; diarrhœal diseases, 174; acute respiratory diseases, 46; consumption, 86; cancer, 30.

MICHIGAN.—The Secretary of the State Board of Health reports for the month of September, 1901, compared with the preceding month: Bronchitis, influenza, inflammation of kidney, pleuritis and whooping cough were more prevalent, and smallpox was less prevalent. Reports from all sources show cerebro-spinal meningitis reported at 6 places less; whooping cough, at 1 place less; measles, at 4 places more; smallpox, at 45 places less; diphtheria, at 18 places more; scarlet fever, at 35 places more; consumption, at 9 places less, and typhoid fever, at 46 places more, in the month of September, 1901, than in the preceding month.

Deaths returned to Sec. of State for the month, 2,886, 214 more than for the preceding month, but are over 400 less than the number recorded for the month of September, 1900. Deaths of infants under one year of age, 714; from 1 to 4 years, inclusive, 262, and

697 deaths of persons aged 65 years and over. Deaths from pulmonary tuberculosis, 142; other forms of tuberculosis, 26; typhoid fever, 93; diphtheria and croup, 47; scarlet fever, 6; measles, 3; whooping cough, 17; pneumonia, 87; diarrhœal diseases of infants under two years of age, 441; cancer, 124; accidents and violence, 196.

MINNESOTA.—St. Paul, 165,000. Report for August: Total deaths, 129; death rate, 9.37; deaths under 5 years, 59; from typhoid fever, 2; whooping cough, 1; croup and diphtheria, 2; diarrhœal diseases, 35; acute respiratory diseases, 8; consumption, 18; cancer, 4.

MISSOURI.—St. Louis, 575,200. Report for August: Total deaths, 787; death rate, 16.41; deaths under five years, 225; from cerebro-spinal meningitis, 1; typhoid fever, 31; malarial diseases, 5; smallpox, 1; scarlet fever, 5; measles, 4; whooping cough, 17; croup and diphtheria, 7; diarrhœal diseases, 61; acute respiratory diseases, 41; consumption, 102; cancer, 24.

NEW JERSEY.—Hudson County (Jersey City and environs), 386,048. Report for August: Total deaths, 676; death rate, 21.0; deaths under 5 years, 312; from typhoid fever, 10; malarial diseases, 3; smallpox, 3; scarlet fever, 1; measles, 2; whooping cough, 2; croup and diphtheria, 10; diarrhœal diseases, 87; acute respiratory diseases, 35; consumption, 71.

Paterson, 107,633. Report for the year ending March 20, 1901: Total deaths, 1,883; death rate, 17.86; deaths under five years, 699; from cerebro-spinal meningitis, 1; typhoid fever, 24; scarlet fever, 6; measles, 4; whooping cough, 7; croup and diphtheria, 47; smallpox, 1; diarrhœal diseases, 160; acute respiratory diseases, 279; consumption, 232; cancer, 64.

Report for the month of August, 1901: Total deaths, 186; death rate, 20.68; deaths under 5 years, 96; from typhoid fever, 3; malarial fever, 1; cerebro-spinal meningitis, 5; whooping cough, 1; diarrhœal diseases, 46; acute respiratory diseases, 9; consumption, 12; cancer, 6.

Newark, 250,000. Report for four weeks ending September 28: Total deaths, 334; death rate, 17.3; deaths under 5 years, 131; from cerebro-spinal meningitis, 1; typhoid fever, 8; malarial fever, 2; smallpox, 8; scarlet fever, 3; whooping cough, 3; croup and diphtheria, 5; diarrhœal diseases, 53; acute respiratory diseases, 14; consumption, 40; cancer, 8.

Twenty-fourth Annual Report of the State Board of Health and of Bureau of Vital Statistics for the Fiscal Year ending June 30, 1900.—Population, 1,833,669: Deaths, 31,474; death rate, 16.70. In 32 municipalities of over 5,000 each, the death rate reported varies from 10.97 (East Orange) to 24.76 (Burlington). Special note is made of the diminished number of deaths of children under five years of age during this and the five years preceding, attributed chiefly to the partial sterilization of milk. The ratio of deaths from pulmonary consumption also has lessened considerably during recent years. The rate per 1,000 of population was, in 1882, 2.92, against 2.12 in 1895, 1.95 in 1896, 1.83 in 1897, 1.78 (the minimum) in 1898, 1.93 in 1899, and 1.85 in 1900. From *diphtheria,* the death rate of 1900 showed a slight increase over that of 1899, but still was less than that of 1898, and only about one-half that of 1891. The figures are; 1891, 1,737; 1892, 1,776; 1893, 1,677; 1894, 1,294; 1895, 1,461; 1896, 1,753; 1897, 1,382; 1898, 950; 1899, 777; 1900, 927. The diminution in the rate is the more marked from the fact that the above figures are not based on population, but are given as the annual death list. Of *typhoid fever* the report says that 113 sanitary districts report 356 deaths—against 486 the previous year. The average number of deaths in New Jersey for 22 years has been 564, and last year's mortality was 208 less than the average.

North Carolina.—The State Board of Health Bulletin reports for August: Total deaths in 25 towns, with an aggregate population of 141,970 (55,880 colored), 248 (135 colored); death rates, white 15.7, colored 29.0, total 20.9; deaths under 5 years, 95 (47 colored); from typhoid fever, 19; scarlet fever, 3; malarial fevers, 17; diphtheria, 1; whooping cough, 7; pneumonia, 3; consumption, 23; nervous diseases, 14; heart diseases, 18; diarrhœal diseases, 38; accident and violence, 11; all other causes, 94.

Ohio.—Cleveland, 395,000. Report for August: Total deaths, 486; death rate, 15.45; deaths under five years, 207; from cerebrospinal meningitis, 1; typhoid fever, 17; malarial fever, 1; scarlet fever, 1; measles, 1; croup and diphtheria, 5; diarrhœal diseases, 85; acute respiratory diseases, 29; consumption, 35; cancer, 18.

Annual Report of the State Board for Year ending October 31, 1899, is a comprehensive record, together with a lucid sketch to date of the then prevailing epidemic of smallpox throughout the

United States, and particularly in Ohio. The inauguration of measures for the exclusive care and the prevention of the spread of consumption are described, and, to the credit of the State, the Cincinnati Hospital for Consumptives was one of, if not, indeed, *the* first municipal hospital for the exclusive care of consumptives opened in this country, July 8, 1897. The specially important work of the board for the year was the investigation of rivers and streams with regard to their pollution with sewage, on which there is an appendix of nearly 300 pages, elucidated with diagrams and maps. It gives the area of the water sheds of the Scioto, Olentangy, Mahoning, Sandusky, Maumee and Muskingum rivers and their tributaries. There remain the two Miami rivers yet to be examined to complete all the streams of the State, excepting the Ohio, on which there have been several partial reports heretofore. Next to it, the largest water-shed of the State is the Muskingum, comprising an area of 7,797 square miles and a population of 388,482, or 77 per square mile. The prevalence of typhoid fever in the State, from which there were 1,072 deaths—3.3 per cent. of the total mortality—and the turbidity of the water of this river, as of the other rivers examined, from which the water supplies of cities are drawn, abundantly demonstrate the need of filtration.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for four weeks ending September 28: Total deaths, 1,573; deaths under 5 years, 527; from typhoid fever, 42; smallpox, 15; malarial fevers, 3; scarlet fever, 3; measles, 2; whooping cough, 28; croup and diphtheria, 26; diarrhœal diseases, 181; acute respiratory diseases, 102; consumption, 175; cancer, 47.

Pittsburg, 332,000. Report for four weeks ending September 28: Total deaths, 450; death rate, 17.6; deaths under five years, 192; from typhoid fever, 30; scarlet fever, 14; whooping cough, 12; croup and diphtheria, 21; diarrhœal diseases, 79; acute respiratory diseases, 20; consumption, 19; cancer, 7.

Annual Report for 1900.—Total number of deaths, exclusive of still and premature births, 29,078, an increase of 1,262 over the previous year; death rate per 1,000 of population, 19.38. Births reported, 29,103—664 more than for previous year; birth rate, 24.49. Marriages, 9,810, an increase over previous year of 603, 15.63 per 1,000 population.

Cases of and deaths from infectious diseases: Diphtheria 4,995, deaths 898; scarlet fever 2,813, deaths 163; membranous croup 930, deaths 144; typhoid fever 3,227, deaths 449; cholera infantum,

deaths 729; smallpox 26, no deaths; cerebro-spinal meningitis 29. deaths 18; measles, deaths 382; consumption, deaths 2,717.

TENNESSEE.—Memphis, 105,000. Report for the year 1900: Total deaths, 2,142 (1,144 colored); death rates, white 17.5, colored 23.8, total 20.4; deaths under 5 years of age, 487 (294 colored); from cerebro-spinal meningitis, 6; typhoid fever, 36; malarial diseases, 220; scarlet fever, 5; whooping cough, 25; measles, 9; diphtheria, 5; diarrhœal diseases, 88; acute respiratory diseases, 386; consumption, 247; cancer, 47.

UTAH.—Salt Lake City, 70,000. Report for August: Total deaths, 57; death rate, 8.14; deaths under 5 years, 19; from typhoid fever, 2; whooping cough, 1; croup and diphtheria, 4; diarrhœal diseases, 4; acute respiratory diseases, 2; consumption, 1; cancer, 1.

WASHINGTON.—Seattle, 100,000. Report for August: Total deaths, 58; death rate, 6.96; deaths under 5 years, 16; from typhoid fever, 4; scarlet fever, 1; diarrhœal diseases, 5; acute respiratory diseases, 5; consumption, 4; cancer, 3.

WISCONSIN.—Milwaukee, 290,000. Report for the year 1900: Total deaths, 4,026; death rate, 13.48; deaths under five years, 1,731; from typhoid fever, 59; scarlet fever, 70; measles, 36; whooping cough, 46; croup and diphtheria, 124; other epidemic diseases, 5; consumption, 373; diarrhœal diseases, 439; cancer, 296. For the month of August, 1901: Total deaths, 385; death rate, 15.4; deaths under five years, 176; from typhoid fever, 6; croup and diphtheria, 4; diarrhœal diseases, 107; acute respiratory diseases, 17; consumption, 30; cancer, 21.

NO SMALLPOX AMONG THE INDIANS AT BLACK RIVER FALLS—ERRONEOUS REPORT CORRECTED.

STATE OF WISCONSIN, STATE BOARD OF HEALTH,
Executive Office, 204 Biddle street,
MILWAUKEE, Oct. 7, 1901.

To the Editor of THE SANITARIAN:

Dear Doctor—Under the head of "Editor's Table," in your issue for October, you quote from the "Evening Wisconsin," a daily paper published in Milwaukee, relative to smallpox among the Indians at Black River Falls. There is not a word of truth in

it. The facts are, the State Board of Health have had these Indians under their supervision from the start, and are paying the expenses of guards and furnishing food for the Indians out of the State funds. There are 1,440 Indians in this location. At first they did not believe it was smallpox, but they have been kept quarantined from the start, and efficiently so. They refused to be vaccinated until several died, after which they consented to be vaccinated and have been very thoroughly vaccinated, so that now the disease is practically eradicated among them. I think there are a few cases left, but quarantine is still maintained, and there has not been a single case of smallpox contracted from these Indians outside of their number. Your quotation states that the "Indians are within three miles of Black River Falls." The distance is seven miles.

Very truly yours,

U. O. B. WINGATE, Secretary.

PHILIPPINE ISLANDS.—Manila, 250,000. Report for four weeks ending August 24: Total deaths, 616; death rate, 32.13; from typhoid fever, 4; malarial diseases, 12; beri-beri, 15; bubonic plague, 25; dysentery, 25; diarrhœal diseases, 100; acute respiratory diseases, 45; consumption, 70.

HAWAII.—Honolulu ("New York Sun," September 19).—The Board of Health has adopted the new regulation which prevents relatives and friends of lepers at Molokai from coming into personal contact with unfortunates. A stockade has been built, and visiting relatives can only talk to lepers through two fences, which are four feet apart. The lepers slightly objected to this arrangement, and threatened to break down the stockade, but were finally pacified. Most authorities do not regard leprosy as contagious, like smallpox or measles, but the Health Board desires to prevent all danger of the spread of this terrible disease, which thus far has defied all methods of cure. Molokai was carefully inspected this week, and found to be in good condition.

CUBA.—Havana, 255,555. Chief Sanitary Officer, Major Gorgas, reports the number of deaths for August 480, considerably less than has occurred in any August since 1889. The least number was 559, in the year 1900, and the greatest, 1,978, occurred in 1898. The average is 902. The comparison with July, 1901, when there were 537 deaths, is also very favorable. The rate per thou-

sand, 22.24, is equally gratifying, and compares favorably with many of the leading cities of the civilized world.

The showing as to infectious diseases is also very good. Not a case of smallpox has occurred since July, 1900. The conditions as to yellow fever become more and more encouraging as the months pass. The smallest number of deaths from this disease, occurring in this month since 1889, was 13, in 1899; the greatest was 262, in 1896; the average is 84. This August only 2 deaths have occurred. A still better showing, however, is made when we take the five months beginning April 1, at which time yellow fever in Havana begins. The least number of deaths in these five months was in 1899, when we had 18; the greatest number was 603, in 1897; the average is 226. This year, during these five months, only three deaths have occurred from this disease. This is so much better than anything that has occurred before that we feel convinced it can only be due to the methods of disinfection adopted by order of the Military Governor; that is, the thorough destruction of infected mosquitoes in the neighborhood of the focus of infection.

The little epidemic that started at Santiago de las Vegas, and from which Havana apparently became infected during the month, is, we think, under control. The same methods of disinfection were carried out there as in Havana. The first case occurred June 23; the second, on July 17. This was followed in rapid succession by seven cases. The last case there occurred on August 21. On July 26 we began sanitary measures, and it looks now as if the disease had been stamped out.

CITY OF MEXICO, 368,777. Bulletin for July: Total deaths, 1,651; death rate, 4.46; annual death rate, 53.52. Prevailing causes of death: Typhus fever, 100; measles, 33; tuberculosis, 188; other diseases of the respiratory apparatus, 189; meningitis, 52; cerebral congestion and hemorrhage, 22; heart disease, 43; diarrhœa and enteritis, 190; ditto, infantile, 253; cirrhosis of liver, 74; abscess of liver, 22; cancer, 19; alcoholism, 9; traumatic accidents, 25; other causes, 432.

BUENOS AYRES, 834,670. Report for July: Total deaths, 1,449; deaths under 5 years, 544; from typhoid fever, 5; malarial fever, 1; smallpox, 125; scarlet fever, 22; measles, 5; erysipelas, 3; whooping cough, 7; croup and diphtheria, 18; diarrhœal diseases, 88; acute respiratory diseases, 234; consumption, 169; cancer, 64.

BOOK REVIEWS.

THE MEDICAL DIRECTORY OF NEW YORK, NEW JERSEY AND CONNECTICUT. Published by the New York State Medical Association, Vol. III, 1901.

An admirably gotten up duodecimo volume of 940 pages, comprehending the names of 12,644 physicians, of which 10,112 are in the State of New York, 1,472 in New Jersey, and 1,060 in Connecticut. Of the 10,112 names in the New York State lists, 3,991 are credited to the Borough of Manhattan and the Bronx, 1,410 to the Borough of Brooklyn, 118 to the Borough of Queens, and 60 to the Borough of Richmond, a total for Greater New York of 5,579, which leaves the number of physicians residing in the rest of the State 4,533. Though confessedly imperfect to some extent, because of the indiffernce of some physicians to the requests made in their own interests for their professional data, it is, nevertheless, probably the most complete summary of legally registered physicians in the three States hitherto published. It comprehends, besides, lists of the county and other medical societies and organizations, hospitals and other institutions, in the several States; and national medical societies of America, with the names of their officers; embodying altogether information which no physician in the territory represented who would know the whereabouts and whereof of his fellows can afford to be without. Price, $2.50. Orders should be addressed to Dr. Frederick Holmes Wiggin, 55 West Thirty-sixth street, New York.

SUBSTITUTES FOR THE SALOON.—By RAYMOND CALKINS. An investigation made for the Committee of Fifteen, under the direction of Francis G. Peabody, Elgin R. L. Gould and William M. Sloan, Sub-committee on Substitutes for the Saloon. 12mo. Pp. 408. $1.30 net. Boston: Messrs. Houghton, Mifflin & Co.

This book is a practical study of the saloon and its place in the life of the workingman. It shows the immense social influence of the saloons, due to their being the popular clubs, and their consequent hold upon the community. It studies their number, their attractions, their practical service in furnishing food and warmth and recreation as well as drink, and shows how great is the task of displacing them. On the other hand, it treats of the progress made by substitutes for the saloon—lunch rooms and coffee houses, social clubs and athletic associations, settlements, reading rooms, gymnasiums, etc. A book replete with information on the rela-

tion of the saloon to social conditions, and practical suggestions for radical reforms or possible substitutes, with some striking examples—particularly English coffee-houses. The nearest approach to these, as substitutes, are club-houses of Christian Associations and churches, but, with a few exceptions, these seem not to have been as yet made sufficiently attractive to saloon patrons to lessen the number of saloons of the common sort, or self-supporting. Nevertheless, it is encouraging to note what appears to be the result of this effort in the decrease of excessive drinking. In New York, for example, the comparative number of arrests for drunkenness for 25 years, summed up from the "Annual Report of the Board of City Magistrates," October 31, 1898, was, including disorderly conduct, in 1874, 40,777—27,203 males, 13,574 females; in 1898, 22,981—17,526 males, 5,455 females. Within this period the population of the city doubled. If the ratio of arrests to population had been maintained, the arrests in 1898 would have approached 80,000. Altogether, the book is replete with information and suggestions of practical importance for the promotion of temperance.

PROGRESSIVE MEDICINE, Vol. III, September, 1901. A quarterly digest of advances, discoveries and improvements in the medical and surgical sciences. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 428 pages, 16 illustrations. Per annum, in four cloth-bound volumes, $10. Lea Brothers & Co., Philadelphia and New York.

This volume is of more than usual value, on account of the recent advances made in the study and treatment of pulmonary diseases, to which the first section of more than a hundred pages is devoted by Dr. Ewald, under the title of "Diseases of the Thorax and Its Viscera."

The surgical treatment of various affections of the lungs and pleura, also, has been extended of late in a manner which opens a field which gives promise of great benefit to sufferers from these conditions. In the consideration of the diseases of the heart and blood-vessels, Dr. Ewart discusses very fully the recently exploited forms of treatment by baths, medicated and otherwise. The section on "Dermatology and Syphilis," by Dr. Gottheil, besides giving the most advanced information concerning the ordinary problems presented in those subjects, discusses very fully the new and important subject of photo-therapy and the Finsen light treatment;

blastomycetic dermatitis and inoculation tuberculosis. In the section on "Diseases of the Nervous System," Dr. Spiller devotes a large portion of his space to an able discussion of tumors and abscesses of the brain. He also describes the commoner forms of the peculiar nervous diseases which are sometimes so puzzling to those who have not made a special study of neurology. In "Obstetrics," Dr. Norris discusses very fully the treatment of eclampsia. He gives also the most recent views on the subject of symphsiotomy, and discusses the large number of recently reported cases in which lumbar anesthesia has been employed in obstetric practice.

Such are the more important features of the volume, which embraces an interesting narrative of the practical advances made in diseases of the thorax, dermatology, syphilis, diseases of the nervous system and obstetrics.

GALLERY OF PICTURES OF INTEREST TO MEDICAL MEN, Rio Chemical Company, St. Louis, comprehends some admirably executed colored photo-engravings.

CONTEMPORARY LITERATURE.

THE GOVERNMENT OF CITIES.

THE NORTH AMERICAN REVIEW for October presents to its readers a most timely series of articles, applying particularly to the government of the City of New York, but generally to the government of any large city. These four articles discuss the four essential points in municipal government to-day; that is, the duties of the mayor, the control of the finances, the conduct of municipal police, and the situation and powers of municipal political organizations, such as Tammany Hall. The second of these articles is concerned with the powers and duties of a city as a business corporation, and under the title of "Financial Problems of a Great City," Hon. Bird S. Coler, the Comptroller of the City of New York, presents to the readers some of the extraordinary difficulties put in the way of financial legislation by the existing laws which have been inherited from a time when the largest city was but a town. Mr. Coler very pertinently says:

"Banks, business houses and private corporations change their financial systems and business methods to meet new conditions, seeking always to keep abreast of the times and to utilize improvements. The financial affairs of the City of New York, with its vast population, enormous resources and extensive public inter-

ests and responsibilities, are to-day regulated by a system adapted to a period when the streets were unpaved, the value of public utilities unknown, and merchants burned oil lamps in front of their stores when the moon was not shining. Franchises granted by the city are to-day the basis of the existence of a score of great corporations, most of them of enormous earning power, yet the public revenue derived from this source is insignificant, and in many cases the method of collecting it is crude and uncertain."

RIGHT-MINDEDNESS EXEMPLIFIED.

In all that occurred from the beginning of his fateful visit to Buffalo, through the days of alternate hope and fear to his dying moment, Mr. McKinley had exhibited a right-mindedness so perfect that human nature seemed capable of nothing better. And from the first news of the bullet-shot on September 6 to the final obsequies at Canton on September 19, Mr. Roosevelt had also exhibited such sincerity of feeling, and such unfailing discernment as to fitting words and right actions, that he also added something to our faith in the high possibilities of human nature. Furthermore, the conduct and the sentiment of the nation at large were so intelligent, so reasonable, and, in short, so essentially right-minded, as to afford a splendid illustration of the reality of American patriotism, and the repose and strength of our democratic institutions. Thus the assassin's bullet—aimed not at William McKinley, the man, so much as at President McKinley in his official capacity, and thus intended to weaken and injure the fabric of our institutions—merely served to show at once the great-heartedness and moral worth of the two representative men chosen as heads of the State, and, further, to illustrate the wholesome mind and spirit of the nation after its long experience of freedom regulated by law. Thus, it has been made manifest that the American people do not hate their institutions, but rather that they love them, and that they have also the capacity, regardless of such minor differences as are expressed by political parties, to appreciate and to love the upright and faithful men whom they have chosen to be their chief public servants.—From "The Progress of the World," in the "American Monthly Review of Reviews" for October.

ACROSS THE ATLANTIC IN A BALLOON.

Not yet; but Samuel A. King, the noted aeronaut, in a discussion of the ways and means for crossing the ocean in a balloon, believes

that the drag-rope is the key to the problem. He argues thus: If a balloon capable of retaining its buoyant gas in a marked degree were to ascend from any point on the American coast-line, and be kept poised at a given height by means of a rope or ropes trailing loosely over the waves, it would be more or less speedily wafted across the Atlantic Ocean.

Practice with the drag-rope has shown me the possibility of keeping a balloon afloat at a convenient altitude, without great loss of gas and ballast. Prairies, forests, mountains and large bodies of water have all been traversed by me with success. The free running of the rope as it glides along over the surface of the water is the special advantage that accrues to a voyage over the ocean.

Andrée thought to utilize this device over the frozen sea, but with what success may never be known. His attempt at polar exploration by balloon was, undoubtedly, premature, and should have been preceded by efforts more closely allied to previous experience. Nevertheless, this was a bold recognition of a principle which only needs greater development to prove its correctness.

The full import of the first successful ocean voyage cannot be foretold. We can compare it only with the first Atlantic cable, or the first steamship, or the first voyage of Columbus. That it lies next in order to these cannot be doubted, and there is only one known way to success, namely, by the aid of the drag-rope.

Such an undertaking should have a clearly defined motive, namely, nothing less than that complete demonstration of the latent possibilities of navigation by balloons, instead of the impossible flying machine, for which the world has been waiting so long.—*Century* for October.

HOW THE EYE SEES IN READING.

By close study of familiar things, surprising facts about them often come to light. Professor Dodge, of Wesleyan University (October "St. Nicholas"), by a number of careful experiments, has made a strange discovery. He declares that to see, the eye must be motionless. Now that he has told us, it is easy to understand that this must be true. You cannot take pictures with a moving camera, and the eye is only a perpetual camera with self-renewing plates. The eye must stop motion while it takes a picture.

In reading, therefore, the eye does not move along the lines regularly. It takes an impression, moves to a new position, takes

another still view, then moves again. Thus the words are taken by groups. Perhaps, following Professor Dodge's lead, some other clever experimenter will now tell us just how wide the lines of print should be for the easiest reading. Every one knows that very long or very short lines are tiring, so there must be a right length. When the proper medium is found, the chances are that we shall learn that the "old masters" of the printing art had chosen the best width for their pages.

One writer has argued that since we see words and letters in whole groups, the new method of teaching spelling—by entire words at a time—is the natural method. But this does not seem to follow, since there are other questions to be considered in deciding which is the best method for teaching children to spell. The old "spelling-match" at the end of school was not so bad a way!

OLD COMEDIES, FARCES AND LAUGHING PLAYS

Are the special features of the Proctor theatres, presented with every detail, but in such wise as to be entirely devoid of the tedious waits and discomfort common to ordinary dramatic presentations.

Manager Proctor has four theatres in New York, one in Albany and one in Montreal, making six theatres now in active operation. By Thanksgiving Day his new theatre in Newark will be ready to open.

Preparations have been made for some noteworthy attractions, both in the comedy and vaudeville line, and as the scheme is elastic, there need be no end of changes and introduction of novelties and notable performers. As for the dramatic scheme, arrangements have been made for the revival for the full list of Augustin Daly's successes—plays which brought the Daly Stock Company into fame, and served to introduce to stage prominence a dozen players who are now stars of bright magnitude.

BOOKS RECEIVED.

Our Heredity from God.
The Right of Way.
Handbook of Sanitation.
The Crown of Thorns.
Report of Commissioner of Education, 1899-1900, Vol. I.
New York State Board of Health, Twentieth Annual Report.
Trans. N. Y. State Medical Society.

THE SANITARIAN.

DECEMBER, 1901.

NUMBER 385.

NEW YORK MILK SUPPLY.*

By HENRY DWIGHT CHAPIN, M. D., of New York, Chairman of the Commission.

It may be of interest to the members of the society to briefly rehearse the incidents leading up to the formation of a Milk Commission, before speaking of its work. A year and a half ago an evening was devoted to a discussion of the milk problem, especially in connection with large cities. A number of experts were present, including the chief of the Dairy Division of the U. S. Department of Agriculture. The subject seemed one of such importance and aroused so much interest that the Society determined to form a commission that should study the best methods of improving the milk supply of New York. The time seemed ripe for such a movement, as the interest aroused and the success of the work have since proven. Moreover, the Medical Society of the County of New York, as the public and legal representative of the medical profession, and the guardian of the city's health, seemed the proper body to undertake such a work.

The first meeting of the Commission was devoted to a discussion of the problem and how it might best be approached. The milk that is put into a large city must be gathered from diverse and distant sources, transported many miles, and finally distributed after many vicissitudes and changes to the customer, who himself keeps it a certain length of time, possibly under unfavorable conditions, before its use. When we consider that all this happens to a vital fluid that is unstable in its composition, that is sensitive to many unavoidable factors, such as temperature, atmospheric effects, shaking, and, above all, to dirt and dirty utensils, the complexity of the question may be appreciated. Heretofore most of the work done in a public study of a city's milk supply

*Report of the Milk Commission of the Medical Society of the County of New York.—"Medical News," October 17, 1901.

has concerned itself principally with the chemical ingredients of milk, more particularly the amount of butter fat it contains.

One of the members of the Commission, having studied this subject for several years, found that the milk of New York, especially as supplied by the best dealers, runs fairly high in butter fat. While the law requires 3 per cent., an examination of over twenty samples from diverse sources showed an average of about 4 per cent. to be present, and not infrequently 5 per cent. is reached by the best dairies. Further examination showed that much was to be desired in point of cleanliness of the milk. Milk is an exceedingly good culture medium for the growth of bacteria of all kinds, and modern studies show that the presence and numbers of bacteria form a good gauge of the general condition of the milk, and the care with which it has been handled. The proper preservation of milk is also involved, as it is well known that the deterioration of milk from acid changes is due to bacterial growth. Ordinary bacteria that contaminate and grow luxuriously in milk come from the dirt that follows a careless handling of the milk, anywhere from its first production to its delivery.

It seemed well to the Commission to establish an advanced standard of clean milk for the ordinary dealer, and the index of cleanliness would be established by a bacterial count. In other words, a bacterial standard would be applied as a gauge of the condition of milk. As this work was to be entirely voluntary, as far as the dealers were concerned, it was decided to invite them to a conference with the Commission, and learn their ideas as to the feasibility of the undertaking. Accordingly, 180 invitations were sent out to dealers in Manhattan and the Bronx, this including all those of any financial importance, as shown by their commercial ratings. The meeting was held on November 16th, at the Academy of Medicine, and about 50 dealers were present. They were invited to give their views freely as to whether part of their milk could not be put out according to an advanced standard for the benefit of infants, invalids, or any who desired a superior article. While many practical difficulties were urged, the general sense of the meeting seemed to be that with some extra care and expense many improvements could be made, under proper guidance, in putting out a strictly clean milk. Encouraged by this expression of opinion, as well as by the good will and spirit shown by the dealers, the Commission determined to call a second meeting of those who were willing to have their milk examined and certified by the Commission. In the meantime, a series of

suggestions, adapted from the dairy rules of the United States Department of Agriculture, were combined in a circular, together with a tentative standard adopted by the Commission. The final paragraph explains the latter as follows:

"The Milk Commission of the New York County Medical Society agrees to guarantee or certify the milk of all dealers desiring such certificate. A special label will be furnished for this purpose. The standard required to obtain this indorsement will be that the acidity must not be higher than 2 per cent., and that the milk must not contain more than 30,000 germs, or bacteria of any kind, to the cubic centimeter. This will be tentatively adopted as a standard of clean milk, as bacteria get into the milk through lack of cleanliness during the milking and careless handling of the milk after the milking, and hence are good clues to the care bestowed in the production and general handling of milk. The milk, before testing, must be in its natural state, not having been heated, and without the addition of coloring matter or preservatives. The butter fat must reach 3.5 per cent. Examination must be made by the experts retained by the Commission, with a frequency at their option, according to the season and the general condition of the milk under inspection, and at least once a month. The Commission reserves the right to change its standard, in any reasonable manner, upon due notice being given to the dealer. The expense of the examination will be met by the dealer. All reports of examinations will be strictly confidential between the Commission and the individual dealer."

About fifteen dealers attended the second meeting, which was understood to include all who were at that time willing to work with the Commission. A report was then made to the Comitia Minora, who authorized the continuance of the work along these lines.

The first examination was made March 4th, for certification, the count showing 58,500, with butter fat 3 per cent. It may be of interest here to see how the better grades of milk in New York run in bacteria. The following tests, furnished by Dr. Park, will show the amount of bacterial contamination of milk put into New York during a winter and summer day. The first was taken November 19th, 1900, being a mild winter day; temperature during the afternoon was 70 and at night 50° F. Samples of milk taken from carts, received directly from cars, gave an average temperature of about 52° F., the range being from 50 to 58° F. The number in the six samples ran as follows: 56,000, 128,000, 35,000,

256,000, 13,600, 2,880,000. For a summer day, June 29, 1901, was taken, the day temperature being 90° F., and the night temperature 78° F. Six samples taken at random show as follows: 520,000, 30,000,000, 3,530,000, 12,000,000, 216,000,000, 9,600,000.

Some idea of the extent of the bacteriological work upon milk done for the Commission will be appreciated by stating that from March 4th to the present date 800 separate bacteriological examinations have been made. This laborious undertaking has been accomplished by Dr. Sarah Belcher, to whose zeal and enthusiasm much of the success of the work is due. The mission is also greatly indebted to Dr. Park for valuable oversight and advice, and to the Rockefeller Institute for Medical Research for its co-operation in allowing Dr. Belcher to render these services as part of the work of the Institute. Bacterial tests have been made in the Research Laboratory of the Department of Health. After visits to a number of farms and dairies, it was aimed to classify the various sources of contamination, so that each one might be separately inspected and eliminated as the source of trouble, or corrected, if found at fault. In order to reduce to practical results these bacterial researches, the following factors were considered and carefully studied:

1. Condition of barn.
2. Condition of cows.
3. The milkers.
4. Condition of utensils.
5. Processes of cooling.
6. Transportation.
7. Condition of cans or bottles when returned from city.

1. *Condition of Barn.*—Dirt and dust, usually so abundant in an average barn, readily get into the stream of milk or pail, and form a fruitful source of bacterial contamination. The common sources of dust are the hay-loft overhead, cobwebs on walls and ceiling, loose boards, dirty windows, floors of dirt, unclean manure gutters, excessive bedding, storage of grain or feed in the barn, the rations, such as piles of hay placed near the milking, and the storage of farm or other utensils in the barn, that soon become covered with dust. A dirty barn quickly raises the bacteria in milk there collected. Thus, on June 8th, a cow was milked in such a barn, and an examination of the milk showed 120,000 bacteria to each cubic centimeter. At the same day and hour, another cow, in apparently the same condition, was milked in the adjoining pasture, away from the dust of the barn, the milk here showing only 26,000. This experiment, repeated twenty times in various localities, always gave similar results. There

is invariably a large increase of bacteria in milk collected in a dirty barn. Even when a barn has been cleaned up, some source of dust may be overlooked and cause trouble. Thus, on June 15th, the premises as well as the cows were examined after the barn had been cleaned. Twelve cows standing in a row in the barn all showed a low bacterial count in the milk separately examined, except the one at the end, which showed 1,000,000. This cow stood next to a pile of dry feed, which was the only factor to account for the contamination. Here was explained an aberration in the milk of this barn that we could not at first understand, as everything had been cleaned according to directions, but this little detail overlooked. Many visits and experiments have thus shown that contamination can easily be avoided if the source is discovered.

2. *Condition of Cow.*—Much dirt that gets into milk comes directly from the cow. When the cow is being milked the udder is pulled down, which loosens dandruff, hairs and dirt from all the adjacent parts. Particular sources of impurity that are apt to be overlooked in cleaning a cow are the folds between the udder and the flanks, and dirt on the tail. Fifty bacterial tests were made in direct relation to the cow. The following, in which clean barns and milkers figured in connection with dirty cows, will serve as an example. Four dirty cows, under above conditions, gave an average count of 90,000. Four other cows from the same herd in the same barn, were carefully cleaned and then milked by the same man, and gave an average count of only 2,000.

3. *The Milker.*—A fruitful source of dirt is directly attributed to the milker. The dirt may come from the hair, hands, especially when chapped and scaly, fingernails, tobacco or clothing. It was found that the milk from certain men always gave a high bacterial count, that could invariably be traced to some of the before-mentioned sources. It is better to have the milkers clean-shaven, and, when milking, they should be clad in white duck suits or blue overalls that are frequently washed. Young, single men make the best milkers, as they are less apt than married men to carry infection from the home. The details of their living admit of better oversight.

4. *The Utensils.*—These include pails, strainers, condition of creamery or dairy room, aerators, stationary vats, portable vats, and bottles or cans. It is sometimes difficult to find which of these factors is at fault, but the condition of the pail or strainer is very important, as when they were found at all dirty the bac-

terial count was always high. Thus, in a case where an ordinary pail and strainer was used, the count was 80,000. On the same day, from the same barn and cows, a sterilized pail and strainer being substituted, the count dropped to 5,000. All utensils must be strictly clean, and, if possible, steamed or sterilized. It was found that cleanliness depended both upon apparatus and proper methods of cleaning. (1) In every utensil all seams must be well soldered to avoid hiding-places for traces of dirt and coagulated milk. (2) Cold or lukewarm water must first be used to avoid coagulation of particles of milk, then a cleansing with hot water, with soap or soda, and a final rinsing with hot water. After washing, cans or bottles should be turned bottom up on racks, and, if possible, steamed or sterilized. The following interesting experiment was made: Two samples were taken from the same can of milk—one from the top, showing a count of 5,000, while the one from the bottom gave 80,000. As the can had been standing in ice, the lower part was cooler. The milk had also been strained, and creaming had not taken place, hence the conclusion was that the bottom of the can was not clean, and had contaminated the milk near at hand. On the whole, it was found that the simpler the pail the better; one that can be milked into quickly and cleaned easily is the best. The plain open pail gave the best results. It was found that metal strainers attached to pails were undesirable, owing to difficulty in keeping them clean. Particles of dirt that might be removed later by straining are broken up by the force of the stream of milk and thus disseminated through the milk. Thus, samples from pails having strainers uniformly gave a higher bacterial count than when strainers were not used, other conditions being as nearly as possible the same. The best general strainers are absorbent cotton, cheese-cloth or Turkish toweling, attached to the receiving cans by clothes-pins. If a metal strainer is then used, it should be as simple as possible, and the wire mesh must be carefully cleaned with a stiff brush. If an aerator or vats of any kind are used, they must be cleaned and, when possible, steamed or sterilized. All joints and seams must be smooth, and the faucets and pipes likewise frequently steamed or sterilized. By requiring more apparatus to be kept clean, aeration, as ordinarily practised, increases the danger of bacterial contamination. The following experiment was made on July 22d: It was found that samples of milk from pail and strainer on a certain farm averaged 3,000. After aeration by the farmer, according to his usual method, the samples gave a bacterial count of 1,404,000.

Here a man with clean cows, barns and milkers, was contaminating the milk by faulty utensils. In the hands of men understanding the importance of strict cleanliness, the aerators are not a source of danger, but if the aerator is not strictly clean, and in proper surroundings, the ordinary farmer may lose more than he gains by its use. Dirty ice, flies, floating dust, pipes and faucets are sources of bacterial contamination. It has been found that with a clean barn, clean cow and clean milker, the ordinary so-called "cow odor" is not present.

5. *Processes of Cooling.*—This we have found to be one of the most important factors in the production of uncontaminated milk. The whole future condition of the milk depends a good deal upon its handling during the first forty-five minutes. The sooner it is brought to a temperature at or below 45° F., at which point the growth of bacteria is greatly inhibited, the better. Many inspections of premises that were clean enough to produce a clean milk gave disappointing results when the milk was allowed to stand for more than an hour without being cooled. Where the milk was brought below 45° F. within twenty or thirty minutes, a low bacterial count *always* resulted, other conditions being right. In an experiment made July 25th, tests were made of milk collected from clean cows in a clean barn, the average count from the pail being 7,000. It was then cooled not lower than 60° F., by a slow process, and after two hours it was still standing at 60° F., when a bacterial count gave 89,000. Five days later the milk, under apparently similar conditions, was cooled down to 45° F. within ten minutes from milking, and then showed a count of only 12,000. This experiment has been repeated at six different farms, in various localities, with similar results. We have found the temperature of springs during the summer to vary from 45° to 70° F., with an average of about 55° F. Hence this method of cooling is uncertain and defective unless ice is added to the spring. Ice is always necessary to the farmer who is handling milk. When springs are used, the surroundings must be kept clean and the water uncontaminated at its source.

6. *Transportation.*—As soon as the milk is put into bottles or cans it must at once be surrounded by ice. If they are kept standing in a vat, the temperature of the water must be at least 40° F., as the milk will then be a few degrees higher. This temperature must be maintained by ice until the car is reached, if the milk is in bottles; if in cans, by means of jackets. The ordinary freight car should not be used. We have found that refrigerator cars,

with doors at the end kept closed, are necessary. The cars should be loaded and unloaded from the centre. The railroads can co-operate in this important work by supplying refrigerator cars and ice. When the dealer removes the milk from the car, it should be re-iced on the platform or at the depot, and kept iced until delivered.

7. *Condition of Bottles When Returned.*—Much contamination can be avoided if the consumer will properly cleanse the bottles before returning them. They should be washed promptly, and never used for any other purpose. We have found cases where drugs, dirt, and even urine, have been found in them. In houses in which there are contagious diseases, no bottles should be returned, but broken and thrown away. In apartment houses, it is usually customary to collect the bottles in the basement, where they are afterward sorted out by the dealers. All kinds of impurity thus get in, making it frequently impossible to thoroughly cleanse these bottles. Thousands of bottles every year are collected by Italians from the dumps, and returned to the Bottle Association, which sorts them out, washes, and returns them to the owners.

In our inspection of creameries, it was found that thousands of Croton bugs were returned in bottles and boxes. The cans are also often returned with portions of decomposing milk remaining in them, the boxes containing the bottles may be mouldy, with parts of the wood rotten from being smeared with decomposing milk, and so forth. The railroads should be requested never to receive bottles, boxes or cans containing any fluid milk. We found that boxes and cans are often thrown off the train by the roadside, where they may be left for hours, exposed to the sun. Utensils subjected to this treatment are only fit to be used again after sterilization, and farmers usually have no such facilities; the creameries may have, but seldom use them.

The various data here recounted are the results of a summer study of the milk question. The information is the result of thirty visits made to various farms and dairies, some at a distance of 180 miles. Each of these visits consumed, at least, one day, and some several days, so that a thorough study of the matter could be made. In the work of the Commission, the individual farm or dairy, and not the milk company, has been regarded as the unit for study and investigation. It was found necessary to work in this manner in order to get good results; in some cases, several visits were made to a given plant. As an example a large

plant was visited on August 11th; the farm was visited during milking time. The notes show that the cows were fairly clean, the barn was defective, showing hay protruding from the ceiling and covered with cobwebs and dirt. Windows dirty. The barn had a southern exposure, so that the sun increased the heat. The manure gutter was not clean; the bedding of shavings had not been removed. Various articles were stored in the barn, such as feed, farming utensils, and the clothing of the men. The cows were getting full rations of hay; the animals were hot and restless, and covered with flies, which necessitated a constant moving of the tail. No means were supplied for keeping the cow quiet during milking. The milk was strained in the barn with a wire strainer, which was bent and rusty. The dairy-room was hot and sunny, showing dust and flies. The milk was passed over an aerator, in which the temperature of the water was found to be 60° F.; the receiving vat and stationary vats were not covered, so that flies and dirt got in. The bottles were standing in ice-water at 50° F. A fair sample of milk produced under these conditions and tested at once show a bacterial count of 455,000.

Suggestions just described were offered, and four days later a second visit was made. As the result of specific directions, in the barn the walls were whitewashed, windows cleaned, and green shades had been placed at the windows having a southern exposure. The floor was cleaned, and the bedding had been removed; the manure gutter was also clean, and land plaster had been sprinkled on the floor and manure gutter. All storage of feed and utensils had been removed. The cows were getting scant grain rations, so that there was not a large pile of hay before the animal that would fill the air with dust and induce movements of the body. The cows were well cleaned. The barn was cooler, and hence the animals were not so restless. The milk was not strained in the barn, but removed at once to the dairy. The dairy-room was clean, dark and cool, with receiving and stationary vats covered with cheese-cloth. The temperature of the water in the aerator was 40° F. The bottles were standing in ice-water at 38° F. A fair sample of milk thus produced showed a count of only 3,600 to the cubic centimeter. This is not an exceptional condition, as a similar experience was repeated at four different times and places. This shows that an elaborate and expensive plant is not necessary to put out a clean milk. What is needed is intelligent attention to detail. A small as well as a large producer can furnish clean milk.

The following example will illustrate an experience with a small dealer, the visit being made September 5th. The cows, barn and man fairly clean. Utensils fair. No aerator and no steam. Ice was being used sparingly. Milk drawn under these conditions was placed in water at 70° F., then taken to the creamery for bottling and sent to the city. An examination here showed a count of 89,000. Various suggestions were offered, and the second visit was made in eight days. Result, cows and barn well cleaned, the milk strained through absorbent cotton and cheese-cloth attached by clothes-pins to a forty-quart can, which was kept standing in a box surrounded by ice. This can had previously been steamed for twenty minutes at the creamery. The can was then taken to the creamery and placed in a vat of ice-water at a temperature of 40° F. In three hours the temperature of the milk stood at 44° F. It was then bottled and sent to the city. A sample of this milk showed a count of 5,400, as the result of the few simple changes suggested. Even a creamery is not necessary for a small dealer to put out milk up to the standard of the Commission. As an example, milk was sent from a small farmer, where cooling to 40° F. was practised within fifteen minutes after milking. This milk was sent to the city in 40-quart cans, surrounded by jackets. Samples taken on the platform in New York at 3 a. m. showed a count of only 3,000.

All the visits made to these farms were educational. The whole family, including wife and children, became interested and cooperated in the work. The attention of neighbors was also attracted to the improvements, which were often imitated, and formed the subject of evening discussions at the village grocery store.

The Commission has no special method to advise, but asks a hearty co-operation from every one concerned in handling the milk. The methods must vary with each plant. In general, it may be said that the following three heads include the essential conditions: (1) Strict cleanliness, which includes the barns, yards, cows, milkers and all utensils. Bacteria which get into the milk by means of dirt are thus thoroughly excluded; (2) rapid and sufficient cooling of the milk (the few bacteria that do get in are thus prevented from growing); (3) thorough icing around the milk until it reaches the consumer. The production of toxins from the growth of bacteria is thus retarded.

In every case the dealer has been able to reach the standard of the Commission without expensive apparatus, by following the

indicated details. The one thing always necessary is plenty of ice. At the same time, great labor has been done by farmers and dairymen as the result of suggestions by the Commission. New plumbing has been put in, new dairy-rooms have been built, floors have been cemented, ceilings made tight, and time and endeavor have not been spared. One dealer was so impressed with the subject of right conditions that a special new barn was put up in order to meet them. Two others are planning new barns that will insure hygienic conditions. Even where the milk has not reached the standard for certifying, great advances have been made, and the general output improved. Eight dealers are now putting out some of their milk up to the standard of the Commission. They are as follows: Slawson Bros., Briar Cliff Farm, T. W. Decker & Sons, Mrs. Van Zandt, Sheffield Farms, Mr. Tuthill, Harlem, Century Co., Locust Farms and Mr. Keller. Many others are making changes and applying for a certification who will doubtless pass the test of the Commission.

In spite of the summer having been the hottest in thirty-one years, all those who have been certified have kept up to the standard under most trying conditions. The thanks of the Commission and of the community at large are due to these dealers, who have shown great interest in this work, and have not spared labor or sacrifice in keeping up to the standard. The milk of each dealer has been examined about twice a month during the summer, and labels given that can be placed in the mouth of the bottle as a proof of certification. The bottle for examination is collected from the dealer in the morning, placed in a bag surrounded by ice, and at once taken to the laboratory. If the milk shows a test close to the limit established by the Commission, a second examination is made in a few days. In the meantime, an effort is made to find out the source of trouble, in order that it may be corrected.

The Commission feel gratified at the interest excited in this movement on the part of the farmers, milk-dealers, the daily press, and the dairy journals. It is hoped by this movement to inaugurate a general improvement in the production and handling of milk destined for large cities.

HENRY DWIGHT CHAPIN, M. D.
WALTER LESTER CARR, M. D.
ABRAHAM JACOBI, M. D.
JOSEPH E. WINTERS, M. D.
Commission.

THE FUNCTIONS OF APPETITE.

Too little account, it is thought, is taken by physiologists of the functions of appetite. As these functions belong in one sense to the domain of psychology, the physiologists are apt to devote themselves wholly to the nutritive value of foods, leaving out matters of the taste entirely. That the latter are of first-rate importance is the opinion of Prof. J. P. Pawlow, of St. Petersburg, whose lectures on "The Work of the Digestive Glands" has just been translated from Russian into French (Paris, 1891), and is reviewed in the "Revue Scientifique" (September 7). From this review we learn that the eminent Russian scientist gives the fullest recognition to the part played by the appetite, not only in ordinary digestive processes, but in bringing on or curing diseased conditions of the digestive organs.

Everybody knows, says the writer, that the normally profitable food is that which is taken with appetite, with sensation and pleasure. So, to restore the appetite is one of the most frequent requests made to the physician. He continues:

"Unfortunately, medical science has strayed from this legitimate tradition, which corresponds to real conditions of digestive function. If we read contemporary treatises on the troubles of the digestive organs, we shall be struck with how little attention is paid to the appetite, either as a cause or as a cure. . . . On the contrary, we may read in certain works the advice that no special heed be given to a poor appetite, which is a subjective symptom of slight importance. Such views can be regarded only as gross errors. . . .

"When we advise the patient that he should eat a little at a time and not to satiety, when he is put on a special diet, when we remove him from his habitual surroundings and send him to a place where his whole life is regulated in accordance with his physiologic needs—in all these cases the physician is trying simply to awaken the appetite and thus takes account of it as a therapeutic factor. In the first case, when food is prescribed in small quantities, besides the avoidance of repletion in an enfeebled stomach, the frequent excitation of the saliva is of great importance, because of the richness of this secretion and its digestive power."

The author cites cases in which an abnormally small secretion of gastric juice in the stomach made it doubly necessary to insure

proper digestion by the saliva. As to change of scene, its bearing on the digestion is not so clear at first, but the writer tells us that it acts as follows:

"Suppose the case of a man whose mind is greatly occupied. It often happens that he can not even for an instant get away from thoughts of his work; he eats, and while eating occupies himself with his plans. This happens with special frequency in the case of persons who live in the whirl of great cities. Systematic inattention in the taking of nourishment naturally brings on digestive troubles with all their consequences. The saliva no longer is secreted or the secretion takes place slowly; the food remains too long in the digestive canal; it begins to putrefy because of lack of the digestive fluids; it thus irritates the mucous lining of the digestive conduit and produces illness. For such an invalid, who remains in the same conditions of life, no medical prescription can be of any real assistance, because the fundamental cause of disease still acts. There is but one remedy—to remove the sufferer from his environment, to relieve him of his professional work, to interrupt the train of thought that possesses him, and to bring it about that for a certain time his sole object in life shall be to care for his health. This result is attained by sending the patient on a voyage or to a different climate.

"It is the duty of the physician not only to regulate the lives of certain individual patients according to these principles, but also to endeavor to extend and to explain widely a knowledge of the importance of the act of eating. The author remarks that this is particularly the duty of the Russian physician. In intelligent Russian circles, where there is generally no sufficiently clear idea of how to live properly, we may find a quite anti-physiologic indifference to the act of eating. In more cultivated nations, the English for example, eating has been raised to a kind of cult. It may smack of animality to give oneself up so exclusively to the joys of the table, but surely it is an ignorant thing to entertain for eating a feeling of contempt. Here the truth lies in a golden mean.

"If we consider the influence of the psychic factor in digestion, the question of condiments appears in a new light. Justification is found for the statement which has long been made on empirical grounds—that it is not sufficient to provide nutritious food at meals; it must also be agreeable to the taste. Consequently the physician, who is often called upon to regulate the diet of isolated individuals or of groups of individuals, must think constantly of

'psychic secretion'; that is, he ought to see and inquire whether the food is eaten with or without pleasure. How often persons intrusted with this duty judge simply by the nutritive value of the food, or attribute their own individual tastes to every one else. In the interest of the public welfare, particular attention must be directed to the feeding of infants. As man is guided in his eating by one or another special taste, and as the initial phase of digestion is closely connected with these, it would appear irrational to suppose that children have exclusively delicate tastes or that these are always the same; this would surely be to impair their capacity of future adaptation to the different situations of life."—"The Literary Digest."

THE AVOIDANCE OF STIMULATION.

The utility of what is called a "bland diet" has been freely discussed of late in the European press. The gist of the discussion appears in an article contributed to the Hanover "Courier." Physicians generally, the writer says, understand by a "bland diet" food that is free from those ingredients that excite and heat, but contains or can contain all the nutrients—albumen, carbohydrates, and fat—necessary for the maintenance of man. Wholly different districts of the nervous system are affected by stimulation and excitement. The usual effect of the substances in which these properties reside is quicker and stronger activity of the heart, accompanied by a sense of palpitation, heat, and so-called ebullition; sometimes the effect is a series of acute phenomena, such as headache, etc. When such stimulating and exciting substances are considered, we think naturally of alcoholic beverages, also of coffee, tea, cocoa, sharp spices, and the like; but food does not always receive all its exciting and heating ingredients in the course of preparation in the kitchen; in many victuals these ingredients are already present, as the result of the origin, manipulation, storage, etc., of the food. Chief consideration must be given here to meat, in consequence of the amount of so-called extractive substances it contains. Dark meat is more exciting than white, and the most exciting meat is that of hunted and pursued animals, venison especially. Moreover, in meat that is not touched for a considerable

interval after the death of the animal, ptomaines appear, which impart the "haut goût" to the meat, and which have a decidedly keen and exciting effect. A bland diet, one that does not excite, must contain nothing or very little of this. It is common knowledge that milk affords such a nutrient, and passes, therefore, justly enough, as the true type of a bland diet; whoever seeks to spare his nerves should drink milk. The vegetable kingdom affords many suitable kinds of food. First in order are the cereals, then pulse, tree-fruits, and finally potatoes. Fat of all kinds, when untainted and fresh, may be used with profit, and the various kinds of sugar; but tobacco is proscribed with vigor. From diet there is only one step to dietetics, which comprises the whole mode of life, and takes not only eating and drinking, but also air, light, dress, movement, etc., into its province. What would bland dietetics be, therefore? It is an experience of every day, with which every layman is familiar, that various impressions of vision and of hearing produce excitement. The same may be said of the impressions of feeling conveyed by the skin. Professor Senator calls attention to the importance of "bland dietetics," and warns us against the inclination to rest content with a "bland diet" merely. The effects of stimulation and excitement cannot be dispelled by a treatment that recognizes only eating and drinking.

FOOD AND DRINK SUPPLY OF PARIS.—United States Consul Haynes, of Rouen, writes as follows, under date of June 3, 1901:

The annual report concerning the food supply of Paris for 1900 contains some interesting figures. Here is the official average of what a Parisian eats and drinks in one year: Two hundred and forty-two eggs, 19.62 pounds of butter, 3.05 pounds of ready-cooked butcher's meat, 34.92 pounds of fish, 154.70 pounds of beef, 25.38 pounds of pork, and 27.83 pounds of fowl and game. This gives a daily average of two-thirds of an egg, 380 grains of butter, 57.12 grains of ready-cooked butcher's meat, 669 grains of fish, 6.81 ounces of beef, 1.11 ounces of pork, and 1.21 ounces of fowl and game. The Parisian drinks in a year 1.89 gallons of alcohol, 3.07 gallons of beer, 1.48 gallons of cider, and 44.9 gallons of wine. This gives a daily average of 0.0387 pint of alcohol, 0.067 pint of beer, 0.0334 pint of cider, and 0.99 pint of wine.

FALLACIES ABOUT BRAIN WORK.

By William Mathews.

We hear a great deal to-day about excessive brain-work, and we read in the newspapers of frequent breakdowns from that cause. Every week or oftener we are told of some clergyman, leading merchant, or other business man, who collapses and has to quit work—perhaps take a trip to Europe and reside there for months or a year—for that reason. College students are reported from time to time as damaging or killing themselves by hard study. We doubt the truth of most of these statements. A knowledge of the facts would show, we believe, that in nine-tenths of these cases the cause of the breakdown was not an excess of brain-work, but the lack of something else—such as nutritious food, sleep, bodily exercise and a cheerful temper. The truth is, no organ of the body is tougher than the brain. Hard work alone, pure and simple—apart from anxieties and fear, from forced or voluntary stinting of the body's needed supply of food or sleep and the mind's need of social intercourse—does far more to invigorate the brain than to lessen its strength; does more to prolong life than to cut or fray its thread.

It is the rarest thing in the world for a man to think himself to death, unless his thoughts run for many years in a monotonous rut—which is as detrimental to vigor as a monotonous diet to the digestive functions—or unless his thoughts relate to something very painful, irritating, or distressing. It has been justly said that thought is to the brain what exercise is to the physical organism; it keeps the channels of life clear, the blood-vessels unobstructed, so that the vital fluid courses along them distributing newness of life and vigor of action to the latest hour of existence. On the other hand, the want of thought starves the circulation, and causes men to drivel and sleep in old age—dead to everything but eating and drowsing in the chimney corner.

If a great lawyer, a leading merchant, manufacturer, railway

manager, or editor subjects his nervous system to a ceaseless strain, taking his scanty meals or "pick-me-ups" irregularly and in a hurry—bolting rather than slowly masticating his food, and sometimes omitting it altogether, and brooding over perplexing problems late at night, and even after he is in bed—what can be more absurd, when the inevitable crash comes, than to ascribe it to excessive brain-work?

So untrue is it that college students break down from the stress of study on the brain that, other things being equal, the hardest students enjoy the best health. Where one young man, if any, ruins his health by wrestling with mathematical and psychological problems, or with the enigmas of Greek and Latin syntax, bad habits, the strain and excitement of athletic contests, cigars, wine-drinking, and other forms of dissipation, and heavy eating at late hours, undermine the health of hundreds. The two little fingers of Dissipation are often heavier than the loins of Euclid. Professor Pierce, of Harvard, demonstrated this some forty years ago by tables of longevity, which showed that the greatest mortality for the first ten years after graduation is found among those who lagged behind in scholarship while in college.

The lives of the great scholars in ancient and modern times show that a student who takes abundant food, sleep and exercise at regular hours, sits down to his meals in a pleasant mood, rests half an hour afterward, recreates himself by frequent rides or walks and commerce with his fellows, may toil over his books ten or twelve hours a day, and yet live happily till he reaches fourscore years, or even longer.

We believe that hundreds of persons who are supposed to have shortened their lives by overwork of the brain would have died far earlier but for their mental labor. Dryden, in his famous portrait of Shaftesbury, pictures him as—

> "A fiery soul, which, working out its way,
> Fretted the pygmy body to decay."

A fiery soul his, indeed, was; but we are sure that the body's decay was due to disease, not to the intense activity of his brain. The truth is, the author of the Habeas Corpus Act could not move without his crutch, and he suffered daily from illness. Instead of shortening his life, it is probable that his mental activity prolonged it by preventing a morbid brooding over his physical infirmities and pains.—"Saturday Evening Post."

MEDICAL INSPECTION OF SCHOOLS.

By EDWARD M. GREENE, M. D., Medical Inspector of Schools, Boston.

The first city in this country or abroad to establish a system of daily medical inspection in all the public schools was Boston. Since then similar methods of inspection have been adopted in New York City, Chicago, and in most of the large cities, as well as in many of the smaller towns.

Medical inspection of schools, both public and parochial, was begun in Boston in the fall of 1894. The immediate occasion which made Dr. Samuel H. Durgin's appeals successful was the unusual prevalence of diphtheria.

The system of inspection is under the control of the Board of Health. The masters and teachers appreciate the fact that this work is beneficial to themselves, as well as to the pupils, and are anxious to co-operate in carrying it out. The parents see, with approval, that their children are safe-guarded from danger, and from the general public nothing has been heard but commendation.

Inspectors are generally selected from the younger men in general practice. The work requires only the ability to make accurate diagnosis. In establishing a work of this kind it is important to have the support of the whole community. There are 250 school buildings, and fifty inspectors of schools, each doctor thus having five schools, and nearly two thousand children under his care.

The pay of inspectors in Boston is only $200 a year. Though the salary is small, the position is an honorable one, and likely to increase a young man's reputation, though not his practice directly. Children are not allowed to go to his house in connection with school work, and any that he finds ill are carefully directed to call in their own family physician, or, if poor, directed to a proper hospital.

A monthly report, filled out on a printed form, is required from each inspector. The report contains a list of the different diseases observed, and the number of cases of each disease found in each school. It also records the number of pupils sent home; the number of vaccinations performed; the number of consultations with

teachers in regard to such matters as sending children out of school for contagious disease at home, the determining when they may return to school, and giving advice to the teacher on any other subject. On the back of the blank forms there is printed a classified list of the important or common diseases. Inspectors should familiarize themselves, if necessary, with the symptoms and appearances of all the diseases there mentioned. This involves, among other things, a considerable knowledge of diseases of the skin, which is not always possessed by the general practitioner. At the end of the year all the reports are tabulated and published in the annual report of the Board of Health.

The inspector has to deal with teachers as well as pupils. The former receive such instructions in regard to the early symptoms of contagious diseases as help them to promptly detect suspicious cases, and send them to the inspector for examination. They are taught the importance of having the child's eyes examined when there is a complaint of habitual headache, and the necessity of examination for polypi, or enlarged tonsils, in mouth breathers, and many other useful things.

The inspector sees only those children to whom his attention is called by a printed slip, on which the teacher has filled out the date, name of the child, the number of the schoolroom, and the complaint which the child makes, or the symptoms which the teacher has noticed. These slips are filled out soon after the opening of school, and deposited in a convenient place, where the inspector finds them. On his arrival at school each child is sent out to him for examination. On each child's slip he records his own diagnosis and his advice in regard to excluding the child from school, or not, and any remarks he wishes to make for the information of the teacher. The child hands the slip to the teacher, and the latter sends it to the master, who is obliged to keep these slips on file, thus preserving in each school a record of all the illness that occurs there. An opinion can then be formed in regard to the relative sanitary condition of each building. Questions of drainage, plumbing, heating, and ventilation are not considered by the medical inspectors, but are referred for investigation to special experts of the Board of Health.

The children who come under inspection may be divided into two classes: 1. Those who are the subjects of contagious disease, and who must be excluded from school for the benefit of the other children. 2. Those who are suffering from non-contagious, though perhaps severe and disabling, disease; or who are mentally

or physically below the normal standard. Some of this second class may be advised to stay out of school, as in cases of certain acute diseases of the eyes or ears, ozaena (if particularly offensive), spinal caries, epilepsy, etc. A considerable number of children of the first class are found—those who are suffering with the specific infectious diseases or with contagious parasitic skin diseases. Some are found among the poorer children, who have returned to school after some unreported illness, for which they have had no physician, and in whose throats the bacilli of diphtheria are sometimes discovered; others are found to be still in the desquamating stage of scarlet fever.

The inspector should always have with him one or more of the diphtheria culture outfits which are supplied by the Board of Health, and take a culture from every case of acute pharyngitis or tonsilitis which he sees. Many cases of diphtheria can be discovered in no other way. After a culture has been made, the child is sent home to remain until a report has been received from the laboratory on the following day. If a case of contagious disease is discovered, the child's books are wrapped up in a bundle and sent to the Board of Health for disinfection or destruction, and the desk and seat are washed by the janitor with a strong solution of corrosive sublimate or formaldehyde.

If more than one contagious disease is found in any room, every child is sometimes examined by the inspector. Clinical thermometers are never used, on account of the difficulty of thoroughly disinfecting them. For a tongue depressor a thin, narrow piece of pine wood is used, and burned after use, so that nothing is carried from one child's mouth to another's. This is a very important precaution, and has been the means of forestalling criticisms. The practice of having a child use his own finger for a tongue depressor is strongly condemned, in spite of its convenience, as the soiling of the fingers with the secretions of the mouth would greatly increase the danger of spreading the contagion.

The question of excluding children affected with pulmonary tuberculosis has arisen. For the child's own sake, as well as to protect others, we advise the exclusion of such children. To protect the healthy from the dangers of contagion is hardly more important than to improve the condition of those who are more or less defective physically. Often they may be advised of the measures necessary to make them healthy and vigorous, and to greatly improve their capacity for pleasant and profitable study. It has been a great satisfaction to me to have detected numerous cases

of previously unsuspected chronic hypertrophy of the tonsils, or of adenoid diseases, and to have pointed out to these delicate, chronically ailing children the importance of being carefully treated by experts in diseases of the throat and nose. At my suggestion the teacher often writes a note to the parents, explaining the conditions found and the importance of treatment. The improvement of mind and body that is later observed in these children is remarkable.

Another very important subject which is brought to our attention daily is that of imperfect vision, with its resultant evils of eye-strain, habitual headache, and nervous debility. Such cases are very frequent. When there is no visible lesion, we roughly test the child's ability to read printed matter or figures on the blackboard at normal distances, and if this is not easily done, or if there are habitual headaches without other obvious cause, we have the parents advised to take such children to an oculist for expert examination. Many of them go to hospital clinics, where, I am sorry to say, they are sometimes turned over to young and incompetent assistants, and return to school wearing improper glasses, and without relief from their unpleasant symptoms. The labor of examining so many cases of errors of refraction proves tedious and uninteresting to the older and abler oculists of the hospital staff. Certainly great good could be accomplished by having a competent oculist make a systematic examination at the school, once at least, of all the children in the grammar school grade. The Boston Board of Health has not yet been able to see its way to having this service performed.

Much has been done in giving advice to individual pupils on the subject of proper clothing, food, exercise, and cleanliness. Inspectors are sometimes invited to address the teachers of their schools on such subjects, and sometimes mothers of younger children have been present to hear such addresses.

A great and salutary lesson in personal cleanliness, and one long remembered, was taught the children a few years ago, when a systematic inspection was made of the heads of all the school children in Boston, for the purpose of discovering pediculi capitis. One-half of all the children were found to be infected, more or less, with these parasites, in some cases to a very disgraceful extent. In one of my primary schools, where the pupils were nearly all children of ignorant foreigners recently arrived from the "old country," nine-tenths of all the children were found to be infected. The need of proper treatment was so urgent that an exception was

made in this one instance to the rule forbidding the giving of prescriptions, and each infected child was given printed directions to buy and properly use a good supply of crude petroleum. Those who were found on subsequent examination to have neglected this advice were promptly excluded from school until they returned clean. Some heart-burning was occasioned among the mothers and children of the better class, who were taken by surprise at our diagnosis, but we heard much more of commendation than of criticism.

Shower baths have been put into the basements of some of the recently constructed school buildings, and children are now allowed and sometimes requested to make a systematic use of them during school hours.—From "Journal of Education," October 17, 1901.

HYGIENE OF THE SCHOOLROOM.

Abstract of Address at a Recent Meeting of the Mothers' Club, Rochester, N. Y.

By Dr. Julia Haywood.

"Hygiene is a comprehensive term," said Dr. Haywood, "and it may be considered as pertaining to the mental, moral and physical well-being of the child. The modern schoolroom is built with the idea of providing fresh air to the greatest extent that modern construction will permit. No room is large enough to provide too much fresh air, and often when the children appear to be dull and listless it is not intentional on their part, but because of the vitiated atmosphere which must result from the exhalations of a score or more of bodies. Teachers recognize this and supplement the best systems by opening the doors and windows while going through their exercises.

"Parents should see that the children are sent to school in a cheerful mood. I have noticed that many children have an attitude

of criticism against their teachers which should not be encouraged. Posture is another matter which should be carefully looked after by the parents as well as the teachers. Spinal curvature is very common among public school children, not sufficiently to cause deformity, but enough to give headaches and backaches. Mothers can help a great deal by relieving overburdened teachers of some of these cares, and, by being watchful, they may be able to prevent improper attitudes. The lungs and heart are crowded, and their action affected by a bent-over posture, and the result on the eyes is often disastrous.

"Myopia, or nearsightedness, is caused by holding the book too close to the eyes and by bending over. The tissues of a child's eye are very soft and elastic, and if the child bends over too long the shape of the ball may be changed and lengthened so that nearsightedness will result, and many symptoms of nervous strain will become apparent. These things are not generally known, even by teachers, who are supposed to know everything, and they should take pains to see that the children study under proper conditions.

"A child's mind needs rest. The mental effort of a child cannot exceed ten minutes at a time. A change of subject is mental rest, as teachers know. That is one reason why diversity of studies is a good thing, but I wish to enter a protest against the system which makes a child know so much and yet so little. I don't see how the schools can have so many subjects and do well with the children. Some boys and girls worry so much about their examinations and school work that it makes them mental wrecks. An overtaxed brain when young makes a weak brain when older, and many sleepless, nervous and cross children are simply overworked in school. It is too great a price to pay.

"It is part of the hygiene of the schools and of the home for the mother to see that the clothing of the children is right. There is an idea that heavy flannels should be worn next the skin, which is part of the oldfashioned notion that woolens are the proper underwear. Woolens are good if some sort of porous material, such as cotton, can be worn over them, so as not to retain the exhalations of the body.

"Infection in the school cannot be watched too closely. I would like to enter a protest against common books, which I understand the board of education is about to introduce. Some children are good about keeping their books clean and others soil them very quickly. It would not be fair to make a child who is tidy in habits use books marked by some other less careful one."

HYGIENE OF THE TROLLEY.

By HARVEY B. BASHORE, M. D.

The spreading of trolley lines into all parts of the country has brought about a new factor, which enters into the daily life of almost every one, and it is right, it is just, that these trolley companies should pay some regard to the well-known sanitary laws. If these are neglected, not only is great annoyance caused to the public, but even sickness and death will be found to be an ever-present result.

Most lines are yet poorly equipped with rolling stock, and as a result the open summer car is used more often and longer than it should be. If riding through fields and woods in one of these cars on a cool September evening does not give one a bad cold, he is certainly immune.

In most places these open cars should probably not be used more than two months in the whole year, and in a great many places in the northern districts, they are undesirable after dark at almost any season. The only good word that can be said for the open car is that ventilation is good, but often it is too good. In wet weather open cars should always be replaced by closed ones.

The closed car presents the usual defect of inefficient ventilation, and with it inefficient heating in cold weather. A great many cars, especially on suburban lines, are heated with stoves, yet nothing more defective could be imagined, inasmuch as the upper part of the car gets fairly warm while a stratum of cold air settles down about one's feet. Electric heaters placed under the seats answer better, but in very cold weather seem to be inadequate. The proper way would be to have these heaters of sufficient capacity, with a cold air inlet on the outside of the car, so that fresh and heated air could be furnished at the same time; and fresh air is sometimes sadly needed, even on a twenty-minute run, when passengers are packed like "sardines in a box." Foul air, of course, could escape by ventilators at the top of the car.

Another important point in the heating and ventilation is that the ends of the cars should be closed by glass windows and doors; by this means a draft of cold air does not rush through the car every time the door is opened. Then, too, the open-end car is

cruel and unjust to the employees, in that they are exposed to all states of the weather; indeed, it is even dangerous, for a man facing a cold wind at zero temperature will get so benumbed that he has not proper control of the car, and accidents are likely to result, not from the carelessness of the motorman, but from the carelessness of the company.

A point as to the windows: Very often they do not fit tightly, and if you are sitting in front of one, there is a cold draft over the back of your neck, when the car is running rapidly; probably it would be better to have cross seats.

Another thing that should be attended to is the disinfection and cleaning of the cars. Street cars used to stop at city limits, but those days have passed; and now they go far into the back country, where sanitary laws, even if there are any, are lax, and people often leave houses of contagious diseases and travel on these cars with impunity; thus the danger of transmitting contagious diseases has increased with the advent of the trolley, and calls for more thoroughness in the matter of cleanliness and disinfection.

Spitting on the floor of public conveyances is still a habit in the rural districts; the rural population is just as slow in sanitary matters as in other things, and one does not need to travel far on a suburban trolley until he is painfully aware of the fact. In many places there is a law against public spitting, and there is no reason why it should not be enforced in the rural districts as well as in the cities.

The trolley car, with its cheapened power, has come to stay, and will become a great factor in broadening and developing the country, but the people should demand that it conform to our modern sanitary advancement.

CURIOUS CAUSE OF DEATH.

The doctors in Vienna, according to the daily press, have been made interested in the case of a young man, twenty-three years old, who has just died after a six months' painful illness which puzzled the physicians, including German specialists. Shortly before his death his ailment was diagnosed as the result of the hatching of eggs of a blue-bottle fly, which the patient had swallowed, causing perforation of the intestines. The sufferer was then too weak to undergo an operation. An autopsy confirmed the diagnosis. Part of the large intestine was riddled.

PROPAGATION OF LEPROSY.

From the "New York Times."

The article published in "The New York Times," issue of September 23, on the question of the eradication of leprosy from Hawaii by the gradual extinction of the native race, does not give the whole scientific reason why isolation of lepers at Molokai has failed to prevent the spread of the disease. All authorities are agreed that enforced isolation in Hawaii is a complete failure. Moyer says that it did not diminish by segregation; there are just as many now as at the start, fifty years ago. Alvarez, superintendent of the hospitals for the treatment of lepers in Honolulu, wrote me thus:

"The laws of Hawaii fail to stamp out the disease [leprosy], but still they are necessary to keep it in check." He continues:

"We have had strict laws of compulsory segregation for the last thirty years, and the results are anything but encouraging. I believe, however, that leprosy, as well as any other contagious disease, could be stamped out by strict isolation, but we find it impossible to isolate every leper as soon as the first symptom appears, and we do not know if the disease is also communicated to others during the long period of incubation, when the most searching investigation would fail to reveal it."

Dr. A. Mouritz, formerly in charge at Molokai, wrote me:

"One of the best fields for observing the grasp that leprosy has on mankind, and the penalty the human race is paying for its apathy in dealing with the disease, can be seen on this island [Molokai], and within twenty-five miles of my home [Mapulehu]. Year in and year out the lepers at the settlements average between 1,100 and 1,200, chiefly Hawaiians, but within the past year or two the disease is making among the foreigners here (white people) considerable inroads. If you have ever lived here you must have learned that segregation is the proposed policy of the Government in dealing with the disease. Yet for years the law was out of the caprice of the politicians; to-day we are reaping the benefits. Segregation is better carried out to-day, but it is far from thorough."

President Smith, of the Hawaiian Board of Health, also wrote me as follows:

"Here in Hawaii we have had much experience with leprosy for thirty years, and have sought for, and are still seeking, to find the best means of treating the disease."

Father Conradi, the Belgian priest who took Father Damien's place with the leper boys at Molokai, where he remained seven years, told me while he stopped with me in New York last year that leprosy was becoming less widespread in Hawaii, not because of the law of segregation, which did not prevent the actual contact between the healthy and leprous people, but because the Kanakas are dying out as a race. Damien himself became a leper because there was contact between him and the leper. Yet here in New York our Board of Health sees no danger in allowing lepers to leave quarantine and mingle freely with our people.

In the last number of "The Pacific Medical Journal," San Francisco, the editor says:

"It would seem that we are in error when we claimed in our last issue that there were not more than 100 lepers in the United States. Dr. Ashmead, of New York, states there are 400 lepers in Louisiana, only 23 of whom are isolated. The doctor also states there are at least 100 lepers in New York State. Dr. Ashmead knows a bank teller who is a leper, and handles money every day. It is estimated there are 500 lepers in Havana Province. It is claimed there are Japanese lepers engaged in catching and canning salmon along the Columbia River. Dr. Ashmead claims that there are also many Philippine lepers in California and Washington.

"Hence there must be some other reason besides imperfect segregation to account for the spread of leprosy in Hawaii, where it is estimated to-day there are 4,000 lepers in all."

I have been occupied some years with the study of the relation which may exist between the fish diet of the Japanese and some other nations and leprosy. I think such a relation would be firmly established if the leper bacillus could be cultivated—say on the gold fish, the most Japanese of all fishes. The carp is eaten alive in Japan, which is a fact of general knowledge, though not the gold carp. The latter is exceedingly susceptible of disease; different kind of fungi tackle it as soon as a scale gets off. Sometimes without any such sauce the fish dies away and the scales appear to be all turned up. No cultivation of the leper bacillus outside of the human body has ever been accomplished. I myself have already removed scales from the gold fish and inoculated the latter with the leper bacillus, but without result; the fish died.

United States Consul, Sol Berliner, recently made a report to the State Department at Washington on leprosy in the Canary Islands. His opinion was that the disease is endemic among the people of these islands on account of their eating a good deal of fish.

I beg to say that this belief is quite common to many leper countries, and even medical authorities indorse it. Mr. Jonathan Hutchinson, the distinguished dermatologist of London, and myself, also believe that there is an insidious connection between fish and the propagation of leprosy.

Since the middle ages leprosy has progressively declined in Europe, excepting in fish-eating countries. Norway, Spain, Portugal, the Baltic States of Russia, Iceland, the fishing provinces of France have still leprosy. Leprosy scourges the fish-eating countries of the Orient, Japan and China, where Buddhist law prohibits the killing and eating of animals. In Japan raw living fish are eaten even while the flesh quivers. Mr. Hutchinson believes in the fish alimentation theory of propagation of leprosy. I believe that fish and mosquitoes act together as intermediary hosts for the transference of the leper poison; that mosquitoes that have bitten lepers become food for fishes which then transmit the germs or spores to man when eaten raw.

Professor David Starr Jordan, Chief of the United States Fish Commission to Hawaii, promised me he would take some interest in investigating the question, which interests him very much. He put the matter in the hands of Professor Everman, ichthyologist of the expedition. My brother, Professor William H. Ashmead, of the United States National Museum, was the entomologist who accompanied these gentlemen to Hawaii last summer. Professor Jordan wrote me that he had found, while visiting Japan, that many kinds of fish were eaten raw. The gold fish, which he said was found in every stream, might well be an intermediary host, as might several of the fresh-water minnows.

Now, when we consider the enormous reproductive power of fishes, it will be evident how readily leprous-infected fish might propagate the spores of the disease, even inoculate the fresh-water streams of a whole country. In one lobster there were found 20,000 eggs. Fish produce an incredible number of eggs. A herring has 36,000, a smelt 30,000, a sole 1,000,000, a roach 1,130,000, a sturgeon 3,000,000, a tench, 383,000, a mackerel 546 (their eggs are larger than those of most fish), a perch 992,000, a flounder 1,357. But of all fish a cod of leprous-infected Nova Scotia is the most prolific, according to one naturalist 3,686,000 and according to another 9,444,000.

Were 1 per cent. of the eggs of a Columbia River salmon now caught by Japanese lepers, and perhaps already infected with the germ, to result in full-grown fish, and were they and their progeny

to increase in the same proportion, they would in sixty years amount in bulk to many times the size of the earth.

On our Columbia River there are to-day several thousand Japanese, some of whom, I learn, are lepers. How easy it will be for those germs, through the fish—if fish and mosquitoes propagate leprosy, which we do not know is not the case—to spread through the streams of the Pacific Coast. Bream, perch, and mullet of leprous Norway transmitted the disease to their young. Fifty female bream produce 3,000,000 young, 100 mullet produce 4,000,000 young. Just think of the rapid spread of the disease that is possible. Of course, in countries where there are no lepers there could be no spread of leprosy through the fish. Until Hawaiian fish became contaminated by Chinese lepers there were no Kanaka lepers.

I have described the feature of this theory of transmission of leprosy, and presented it in an article published in medical journals of this country and Europe. The manner in which many cases of leprosy have been spread singularly agrees with the theory which I, with other leprologists, entertain as to the rapid propagation of leprosy.—ALBERT S. ASHMEAD, M. D., 350 West 23d Street, New York.

Sept. 25, 1901.

THE REAL EFFECT OF ALCOHOL.

There can be no doubt that during the last ten years a large amount of scientific research has been devoted to determining if possible the actual effect of alcohol upon various organs in the body; and there can also be no doubt that most of the results which have been obtained from these methods of research have seemed to prove very conclusively that many of the ideas held by the medical profession and the laity concerning the therapeutic value of this substance are erroneous and based upon improperly collated facts, or upon distinct errors in judgment, as to the results produced by its use. During this period there have, of course, appeared a large number of papers, many of which were not scientific, either in the method of their presentation or in the array of facts which were adduced; and with these papers, which have usually been written by fanatical opponents of the drug, or by those who are unduly enthusiastic concerning its effects, we shall have nothing to do at this time.

Just at present there is probably no one, of higher scientific reputation, who seems to be more strongly opposed to the common views held concerning alcohol than Schmiedeberg, who is the Professor of Pharmacology in the University of Strasburg. This celebrated investigator holds that alcohol belongs to the class of nerve and muscle poisons of the fatty series, and that it is a part of the special group which is made up of such substances as chloral hydrate, sulphonal, paraldehyde, and anæsthetics like chloroform and ether. Not only is this conclusion reached because of its chemical relationship to these substances, but also because he believes that its physiological effect is to a large extent identical with them. In other words, Schmiedeberg believes that when we speak of the stimulating effects of alcohol we are speaking of something which practically does not exist; and as lately as 1895 he has asserted that the intellectual faculties, instead of being made more acute and perfect under the influence of moderate doses of alcohol, are distinctly impaired. Other investigators have shown that while a person seems to perform mental labor with greater readiness under the influence of alcohol, in reality he accomplishes less. So, too, other experimenters, chiefly in the French school, employing the dynamometer, or Mosso's ergograph, assert that while alcohol increases the working power for the first fifteen minutes, it afterward produces a depressant influence, and that an actual decrease results in the amount of labor performed in an hour.

So far as the influence of alcohol upon the heart is concerned, we do not think that a large amount of scientific evidence has been adduced to prove that it has no such stimulating influence as has usually been attributed to it, and some of the investigations which are quoted as indicating that the influence of alcohol upon the circulation is not stimulating are certainly inadequate. Schmiedeberg, whose opinion from a pharmacological point of view is certainly worthy of great respect, denies that this drug produces even a quickening of the pulse, apart from the stimulating circumstances under which alcoholic drugs are usually taken, and thinks that any benefit which occurs in cases of cardiac weakness or relaxation of the heart muscle under its use is not due to the stimulant influence of the medicament so much as to its effect upon the respiratory functions.

Careful researches as to the effect of alcohol on the respiration are also lacking, but no less an investigator than Binz has asserted that it is a distinct stimulant to the respiratory center.

When we come to a consideration of the influence of alcohol

upon the tissues of the body, there is a still greater difference of opinion between investigators, and, as has been well said in the Edinburgh "Medical Journal" for March, 1901, by J. Mackie Whyte, the question as to whether alcohol is a food or a poison is still a matter of as hot debate as it was twenty or thirty years ago. Whyte points out that moderate quantities of alcohol—that is to say, about two ounces—are usually oxidized in greater part in the body of the strong, well-developed man in the course of twenty-four hours, and because of this oxidation it has been claimed by many that a transformation of potential into kinetic energy takes place, which kinetic energy may be employed to produce heat, functional activity, or ordinary voluntary exertion. He also quotes Atwater's experiments, which are now so well known, and which were published in the Bulletin of the United States Agricultural Bureau, No. 69, about eighteen months ago, which seem to indorse the view just expressed. Whyte, on the other hand, seems to think that the administration of alcohol to the average individual is distinctly deleterious, and that it usually results in impaired resistance to the attacks of infectious diseases. He then goes on to point out how those who abuse alcohol are peculiarly susceptible to diseases such as pneumonia and tuberculosis, and that animals which have received considerable quantities seem to be unduly susceptible to the infections of anthrax, tubercle and diphtheria.

These facts must be regarded with much care. There is a great difference between a consideration of the influence of alcohol in impairing vital resistance when it is taken constantly and in poisonous doses, as by the ordinary drunkard, and when it is used rationally by the skilful physician. So, too, in many instances, when alcohol has been administered to animals and has been found to impair their vital resistance, a careful study of the experiment reveals the fact that the doses given to the animal have been inordinately large, and far in excess of those which are commonly taken by man, even when he abuses this drug. Thus, as much as six ounces was not infrequently administered to some dog, and as the average dog probably weighs from ten to fifteen kilos, and the average man five times as much as this, this dose will be the equivalent of ten ounces, which, while it might not be excessive if distributed over twenty-four hours, would be excessive if given in one dose or if continued daily for a long period of time amounting to weeks or months. Just at this point the experimental evidence which has been adduced seems to be particularly antagonistic to the clinical evidence, which is usually regarded with favor. Physi-

cians innumerable administer alcohol during the course of infectious processes, with the idea that it supports the system and aids the patient in withstanding infection. It would seem scarcely credible that the combined experience of thousands of physicians can be erroneous, and that the results of a few experimenters can be correct, although, of course, it is true that if the drug is abused it does harm.

We have written this editorial without being able to adduce any very good grounds for doubting the series of experiments which we have touched upon. We are forced by the standing of the various investigators whom we have quoted, to pay respectful attention to the views which they advance. But we are also forced, by what we have seen at the bedside, to the conclusion that alcohol is a valuable drug in many conditions in which, so far as our present knowledge goes, a stimulant seems to be urgently required; and we certainly shall continue to use it as a stimulant in cases in which we believe that it is indicated, until it can be clearly shown that the symptoms produced by it, which we have been wont to consider favorable, are really unfavorable, and that the drug possesses none of the qualities which have hitherto been assigned to it. —*Therapeutic Gazette.*

ANTIQUITY OF THE TEMPERANCE REFORM.

It is well known that the evils of wine-drinking were seen and declared by the Jewish sages and prophets many centuries before Christ. About the year 1000 B. C. Solomon uttered his warnings against wine and strong drink which are as familiar to the American people to-day as they were to the Jews of the preacher's time. But the Israelites were not the first people to produce illustrious advocates of abstinence from wine. Long before the birth of Solomon, warnings against intemperance were common in the literature and laws of China. In the year 2285 B. C. a man was banished by the emperor because he had invented an alcoholic drink from rice. In 2205 B. C. the Emperor Yu refused to drink wine, for he said: "In after ages there will be those who through wine will lose their kingdoms." Drunkenness did, in fact, disgrace several of Yu's successors, and finally proved the ruin of the succeeding dynasty in 1122 B. C. Wu Wang, the next emperor, declared: "When Heaven has sent down its terrors and our people have been thereby greatly discouraged, and lost their sense of

virtue, this, too, can be ascribed to nothing else than their unlimited use of spirits." He accordingly commanded one of his viceroys as follows: "If you are told that there are companies who drink together, do not fail to apprehend them all and send them to Chow, where I may put them to death."

The prohibition of drinking in company was again resorted to in 206 B. C., but the penalty was now a fine instead of death. In 98 B. C. the government assumed the manufacture and sale of liquor as a monopoly. It advanced from restriction to complete prohibition in A. D. 459, with the penalty of death for making, selling, or using liquor. In A. D. 781 the emperor levied a graduated tax on liquor shops, and at the same time forbade all persons to drink. In 1160 officials were forbidden to drink under penalty of death. Finally, in 1279, all liquor-makers were banished.

After the Chinese, in point of time, came the Jews. After them the Hindoos. In the sixth century B. C. Manu, the great legislator whose code of laws is still the highest authority in Hindoo courts, gave this law:

"With the drinker of wine let no one eat, no one join in sacrifice, no one read. With such a wretch let no one be allied in marriage. Let him be abject and excluded from all society, * * cast forth as a vagabond on the earth. Branded with indelible ignominy, he shall be deserted by his own parents and treated with respect by none."

Severe physical penalties were also prescribed by Manu for this offense. These have long been obsolete, but to this day the Brahmin who tastes wine incurs all the social penalties of the ancient law.

Soon after Manu arose Siddartha, the founder of Buddhism. One of his teachings was that "man already drunken with ignorance should not add thereto by the imbibition of alcoholic drinks." One of the vows taken by Buddhist monks was this: "I take the vow to abstain from intoxicating drinks, because they hinder progress in virtue." And among the sacred writings attributed to the Buddha or derived from his teachings was this precept: "The householder that delights in the law should not indulge in intoxicating drinks, should not cause others to drink, and should not sanction the acts of those who drink."

In accordance with these principles the ancient laws of Ceylon, Burmah and other Buddhist countries forbade the manufacture, sale, or use of liquor.

In A. D. 626, the fourth year after the Hegira, Mohammed, to promote the discipline and efficiency of his army, forbade the use of wine to the soldiers. This rule prevails in full force and effect in the Turkish army to the present day, with the result that the Ottoman soldier's capacity for endurance and for quick recovery from wounds is famous throughout Europe.—"Chicago Israelite."

DRINK STATISTICS.

The British Board of Trade has just published a memorandum which will give pleasure or pain, according to the point of view of the person for whom the figures have interest. They show as accurately as possible, from the averages of five to ten years, the per capita consumption of wine, malt liquor, and spirits in the principal countries of the world. The averages of Great Britain, France, Germany and the United States are given as follows, in gallons per head of population:

	Wine.	*Beer.*	*Spirits.*
United Kingdom	.39	31.7	1.12
France	24.04	6.2	2.02
Germany	1.45	27.5	1.94
United States	.33	13.3	1.06

This would give for the four countries named a per capita consumption of stimulating beverages as follows:

United Kingdom	33.21 gals.
France	33.8 gals.
Germany	30.89 gals.
United States	14.69 gals.

This comparison would seem to show that practical temperance obtains to a much greater extent in this than in other countries. That this is true of the spirit consumption of the people of this country, as compared with that of France and Germany, is surprising. Equally surprising, perhaps, is the relatively small consumption of wine in the German Empire; also that the consumption of beer in Germany is less than that of the United Kingdom.

The net national revenue last year from excise and import duties in the four countries named was: United Kingdom, $104,787,000; France, $115,222,000; Germany, $76,309,000; United States, $139,499,000. It will be understood that these figures do not include any part of the collections from local excise taxation. In percentage of total revenue the receipts from liquor taxation in the countries named were: Great Britain, 36 per cent.; United States, 29 per cent.; France, 19 per cent.; Germany, 18 per cent.

MEDICAL EXCERPT.

By T. P. CORBALLY, A. M., M. D.

SECRETION OF THE GLANDS.—M. J. Gomez Ocana, of Madrid, presented to the Cinquième Congrès International de Physiologie, Turin, Sept., 1901 (Le Progrès médical, Oct. 12, 1901), a communication on the internal secretion of the glands having excretory ducts, and also of those that have no such outlets, and under the same head he included the non-glandular organs.

Since, he says, the existence of glands, without excretory ducts, is admitted simply because they modify the composition of the blood with the products of their metabolism, the existence of the function of secretion cannot be longer denied to other tissues, the nerves included.

I have taken as the measure of the activity of the products of the glands and of the other tissues the effect of their action on the nervous system generally, and more particularly on the pneumogastric, on the cardiac rhythm, and on the arterial pressure. The injection of the extract of the suprarenal capsule into the veins of animals produces an extraordinary degree of elevation of the arterial pressure and a diminution of the rapidity of the pulse. When extracts of the thyreoid gland are injected into the animal the arterial pressure is diminished, and the excitability of the nerves is greatly increased. I have also observed a marked diminution of the arterial pressure after the injection of extracts taken from the liver. With the extract of the liver of the sheep the dynamogenic effects of the suprarenal capsules may be neutralized.

Often after the injection of the extract of the liver into the veins of dogs a marked diminution of the rapidity of the pulse is observed. The extract of the kidneys, when injected into the circulation in dogs, produces a marked diminution of the frequency of the pulse and an elevation of the arterial pressure. The cerebral substance of the dog is very poisonous—très-toxique—for animals of the same species. Injected into another dog it produces great excitement, but this condition is only temporary, and is soon followed by a profound narcosis, loss of sensibility, and tonic convulsions. The anæsthetic condition lasts from five to fifteen minutes; but the dog does not awaken completely. The animal remains as if benumbed, and sometimes has spasms and muscular contractions. Notwithstanding the tonic action that has heretofore been attrib-

uted to the testicular fluid, the extract of this gland injected into the dog produces a marked lowering of arterial pressure.

TREPHINING YOUNG ANIMALS.—M. Jean Demoor, of Brussels, presented a report to the International Congress at Turin; a communication on the effects of trephining on young animals. (Le Progrès médical, Oct. 12, 1901.)

Danilewsky, he says, has shown that in trephining the skull of dogs a few days old there follow later two distinct phenomena: 1st. The arrest of development in the substance corresponding to the part trephined; 2d. The appearance of epileptiform attacks, followed by death, which occurs usually when the animal is about six months old. In trephining dogs from 3 to 5 days old over different parts of the brain, the following conditions have been observed: 1st. The natural development continued during the first months; 2d. At the end of a given time, generally in the fifth month, a general emaciation is evident, epileptiform attacks occur and death follows; 3d. The symptomatology and the autopsy of the animals show that the local lesion in the young skull has exerted a remarkable influence over a large surface of the bone, and that neither in the development nor in the final morbid emaciation has there been any special phenomenon whatever manifested in any given region of the body. Experiments made on rabbits give results very similar to those mentioned above.

The histological study of the brains of animals operated on shows that: 1st. All the cellules present a moniliform appearance very marked of the dentritic filaments, which appear under the form of very highly colored grains united by a hyaline substance. The monilization is the consequence of the excitation resulting from the convulsions in the animal thus killed. During the period of emaciation the dentritic prolongations are not moniliform, but they have a coloring pale according to Golgi. This fact proves that the moniliform reaction is not a reaction of degeneration, as has been so persistently claimed. 2d. All the cellules present a very intense chromolytic condition. The impoverishment of the neurones is characteristic of the nerve cellules of animals that have been trephined. 3d. Neuronophagy has been observed only once in the brain of an animal in which death came on very late, and was preceded by a period marked by all the symptoms of imbecility.

EXPERIMENTAL TUBERCULOSIS.—MM. Lannelongue, Schard and Galliard have been investigating the influence of varying temperature on the evolution of experimental tuberculosis, and have

presented the results to the Academie des Sciences (Le Progrès médical, Oct. 26, 1901).

They have continued to study all the circumstances that can influence the development of experimental tuberculosis. Three groups of guinea-pigs equal in weight, and each consisting of ten animals, were inoculated at the same time in the breast with the same dose of the virus. One group of these animals was constantly kept in the laboratory; a second group remained constantly in the open air; and the third were kept alternately within and in the open air. The mortality was nearly the same in the three groups. Three died in the first, 2 in the second, 4 in the third; but it is necessary to add that the difference of temperature between the interior of the laboratory and the space without was inconsiderable. Of two other groups of guinea-pigs inoculated in the breast, one was left in the interior of the laboratory, the other was kept during 9 hours a day in an apartment heated to 38° C.—100.4 F., and the rest of the time, including the night, were left in the open air; another lot, as a test, was submitted to the same sudden change of temperature. At the end of 100 days the second lot was all destroyed, while there was but one dead in the first series, of the test only one had died since the first days of the experiment, and then because the ventilation of the chamber was not properly regulated.

From these experiments it may be seen that neither the light variations of the temperature nor the moderate degree of cold had any appreciable influence on the development of the tuberculosis in the guinea-pigs; on the contrary, the rapid changes of temperature seemed alike to accelerate the progress of the disease.

UROTROPIN, prepared solely by the "Chemische Fabrik auf Actien vorm. E. Schering," of Berlin, under the supervision of Professor Nicolaier, is the clinical name of a compound of formalin and ammonia corresponding in chemical composition to the formula C_6, H_{12}, N_4, is commended by "American Medicine" (April 13 and May 11, 1901), as one of the very few new remedies upon which reports as to efficacy have been well-nigh uniformly favorable. It has shown itself to be more efficacious than any other drug in ridding the urine of pathogenic organisms. Taken internally in daily doses of from 20 to 30 grains, it rarely excites any ill effects, and is rapidly eliminated in the urine.

"The best results from Urotropin have been in those diseases of the bladder and pelvis of the kidney in which bacteria are found freely in the urine. Thus, it has proved very effective in typhoid

cystitis, cystitis accompanying enlarged prostate and urethral stricture, and in simple bacteriuria. On the other hand, when the bacteria, instead of being free in the urine, are chiefly in the tissues of the bladder, as they are in tuberculous and gonorrhœal cystitis, Urotropin is of little value. As the urine of typhoid patients frequently contains typhoid bacilli in great numbers, Horton-Smith, Richardson, Cammidge, and others have advocated as a routine treatment the administration of Urotropin during the last weeks of the disease in order to render the urine sterile; but such a procedure seems entirely unjustifiable. The bacilli are found in the urine in less than one-third of the cases. When present they are not always provocative of harm to the patient; Urotropin is not always effectual in removing them, and finally, so far as the safety of the community is concerned, it is far more rational to disinfect the urine in every case after it has been voided."

An Ideal Anodyne.—D. S. Maddox, M. D., Coroner, Ohio, says ("Med. Brief"): "While looking about me for some agent which would produce satisfactory anodyne and hypnotic results without the deleterious and pernicious after-effects of opium and its ordinary derivatives, I came upon the preparation known as papine. After a somewhat extended trial of this remedy I am convinced that it is the ideal anodyne. Although derived from the Papaver Somniferum it is singularly free from the objections of the ordinary opiates. It does not constipate; it does not derange the stomach; it does not cause headache; it does not induce any drug habit; it is safe and may be given to children as well as adults."

Consumption of Horse Meat in Frankfort.—Consul-General Guenther, of Frankfort, May 15, 1901, says that, according to the Frankfort "News" of even date, the consumption of horse meat in that city has increased very slowly. The first horse-meat dinner was given on October 6, 1847, at Bornheim, a suburb of Frankfort, under the auspices of the Society for the Protection of Animals. As soon as a horse was slaughtered—and at that time only young horses were killed—the society published the fact, and the meat was sold at 6 kreutzers (about 4 cents) a pound. The people did not take kindly to it, however, and it was not until fifty-four years later that the first horse-meat restaurant was opened. At the present time about 1,000 horses are slaughtered annually, and a separate slaughter-house for this purpose has been built.

EDITOR'S TABLE.

SANITARIAN, DECEMBER, 1901.

THE SANITARIAN TO DATE.

GROWING OLD? NO!

Call not him old, whose visionary brain
Holds o'er the past its undivided reign.
For him in vain the envious seasons roll
Who bears eternal summer in his soul.
If yet the minstrel's song, the poet's lay,
Spring with her birds, or children with their play,
Or maiden's smile, or heavenly dream of art
Stir the few life-drops creeping round his heart—
Turn to the record where his years are told—
Count his gray hairs, they cannot make him old.

—O. W. HOLMES.

Twenty-eight Years—Forty-seven Volumes.

The discrepancy is due to but one volume yearly for the first eleven years, and two volumes since.

It was based at the outset upon medical knowledge and sanitary service over an extensive field of observation in various climates in different quarters of the world, large experience in dealing with epidemic diseases, and practical sanitation for the maintenance of health under the most trying conditions, though it was not so stated in the Prospectus, still carried (on ad. page) without change, except by the addition of a promise to abide by it. Nevertheless, the bare announcement was received with signally gratifying expressions by Willard Parker, Stephen Smith, S. Oakley Vanderpoel, Edwin M. Snow, Andrew Clark, A. L. Loomis, Austin Flint, Austin Flint, Jr., Samuel G. Armor, Wm. N. Van Beuren, William Hammond, James M. Minor, Henry W. Bellows, John Ordronaux, C. R. Agnew, Gordon Buck, T. Gailard Thomas, N. S. Davis, J. M. Toner, Jas. F. Hibberd and others, who had knowledge of the sanitary work then but recently undertaken in England, and a lively sense of the need of like work in this country, some of whose letters are published in early numbers.

AFTER NINETEEN YEARS.

"THE SANITARIAN for June, 1892, contains a life-sketch of its venerable and distinguished editor, Dr. A. N. Bell (from "The Brooklyn Medical Journal"), and several contributions upon 'The Triumphs of Preventive Medicine,' in the interest of which Dr. Bell has labored so long and so successfully. * * * No one has been so long, so patient and so persistent in awakening public attention to an interest in this cause. No one has filled so many positions demanding skill in practical work. No one has been more successful in practical work under greater difficulties. The writer of the article is Dr. Stephen Smith, the eminent surgeon and anthor."—*Tennessee State Board of Health Bulletin.*

Soon after the publication of the article in "The Brooklyn Medical Journal" here referred to, the editor received many communications from subscribers and others who had been readers of THE SANITARIAN, with reference to what, in their judgment, it had been the means of accomplishing in the promotion of its purpose, in part as follows:

ELMIRA, N. Y., May 6, 1892.

Editor of THE SANITARIAN:

It is needless to state that "all sorts and conditions of men" have profited by your labors in behalf of sanitary reform. Individually and through your journal sanitation, in the direction of school-children, has witnessed development from small beginning up to the present advanced state of knowledge on the subject, by which the health of innumerable pupils has been preserved and education made possible, which otherwise would have been unattainable. This is only a single instance of what has been accomplished by means of enlightened sanitary inquiry, which in the manner of "line upon line, precept upon precept, here a little and there a little," has forced itself upon the attention of the medical profession. This branch of inquiry, which is mentioned by way of illustration, including the site and construction of school-houses, water supply, drainage, cubic space, the admission of light, building of desks and seats, hours of study, and physical training, shows the scope of investigation which has characterized THE SANITARIAN during the many years its pages have teemed with questions of the most vital importance.

When we consider the wide range of topics that has filled the pages of THE SANITARIAN on questions embracing the health and welfare of the people, a summary is presented of the history of a particular field of inquiry, encyclopædic in character, which cannot

be furnished in any other form. Indeed, the volumes of THE SANITARIAN constitute, in a shape available for ready reference, a complete presentation of what has been contributed to preventive medicine since you undertook to lead scientific investigation in the department you have been found so capable of illustrating.

WILLIAM C. WEY.

MEDICAL DEPARTMENT, TULANE UNIVERSITY OF LOUISIANA,
NEW ORLEANS, April 23, 1892.

DEAR DR. BELL: I take this opportunity to assure you of my highest appreciation of your erudition and experience as a sanitarian, and of the great value, unequaled in the United States, of your monthly publication, THE SANITARIAN.

STANFORD E. CHAILLÉ.

NEW YORK, May 2, 1892.

DEAR DR. BELL: I congratulate you on the well-merited tribute accorded you by Dr. Stephen Smith, in the May number of the "Brooklyn Medical Journal," and upon the ability with which you have conducted THE SANITARIAN, now in the twentieth year of its existence. Each successive number has shown your untiring devotion to preventive medicine, and to say that THE SANITARIAN occupies the first place among the periodicals of its class is very far from overestimating its value as a practical and popular educator in all matters relating to public health. On its pages have been reported from time to time transactions of the various learned bodies whose labors are devoted in whole or in part to the improvement of human conditions, thus bringing readers in close relation to the best thinkers and workers of the age. In turning over its leaves one finds that it has recognized and supported every public movement promotive of the interests and welfare of the people. This is especially shown by the energy it has displayed in the organization of national, State and municipal boards of health, and voluntary health associations as means of securing a wise system of sanitary administration, and creating a popular interest in those subjects which relate to the prevention of disease and the saving of life. Public health administration has at all times been carefully reviewed, and wherever criticism has been deserved, your dearest personal friends have not escaped the strictures of your just, even though it be somewhat caustic, pen.

The subject of house sanitation has at all times received due attention, and you have kept pace with the most advanced views on this important branch of domestic hygiene. The same may be said

of school hygiene, in the advocacy of which you have always been found at the front.

In the field of scientific investigation your readers have been kept well informed of the results of bacteriological study, the gradual growth and development of the germ theory; the value, use, and methods of employing antiseptics and disinfectants, detailing at length the results of experiments in testing the relative efficiency of the several agents used in this department of sanitary science and effective practical work.

The growing interest in matters pertaining to public health which THE SANITARIAN has done so much to foster is seen in the public press, heard from the pulpit and platform, and is especially shown by the establishment of professorships in medical, literary and technical institutions.

But neither time nor space will allow me to notice the many other features which render THE SANITARIAN indispensable to one who reads it—as I have for the last nineteen years; but I venture to suggest that every practical sanitarian who has frequent occasion to refer to his back volumes will soon need an index volume to aid him in such reference. If such a volume could be prepared, giving a brief epitome of the more important articles, I am sure your subscribers would support you in the undertaking.

E. H. JANES.
(Assistant Sanitary Superintendent, Department of Health, New York.)

NEW YORK, May 3, 1892.

MY DEAR DR. BELL: I have read with great interest Dr. Stephen Smith's interesting account of your life and life-work as a practical sanitarian. Certainly no man in this country has done more than yourself to call public attention to the importance of general sanitation, and inculcating individual sound doctrines in your writings upon these important subjects will not be questioned by any sanitary expert.

I trust that your valuable journal, THE SANITARIAN, may remain under your direction for many years to come, in which case it will no doubt maintain the position which it has attained as the leading sanitarian periodical in America.

GEORGE M. STERNBERG.
(Deputy Surgeon-General, U. S. Army.)

COLDWATER, MICH., May 3, 1892.

MY DEAR BELL: I have read Dr. Smith's paper in the April num-

ber of the "Brooklyn Medical Journal." To show what THE SANITARIAN alone has done would require an index catalogue. If it were read and consulted, and the suggestions it suggests, the helps that help, and the advice that advises, applied in their usefulness, sanitation would be more advanced. Let us be thankful that you have done so much so worthily. T. J. TURNER.
(Medical Director, U. S. Navy.)

How well these encomiums are sustained is shown by the *forty-seven volumes* now complete. Some of the particularly prominent subjects discussed in the first series (eleven volumes), 1873 to 1883: Abattoirs; Adulterated Foods; Excessive Death-rate Among Children; Filth Diseases; Garbage Disposal; Health Legislation; Health of Rowing Men; House Drainage and Sanitary Plumbing, *illustrated;* Infant Diet; Milk Analysis; Panama Canal Sanitation; Perils of Emigrants; Dwelling Houses for Working People; Deformities and Hygiene; Perils of the Schoolroom; Perils of Massing Population in Cities; Public Parks and Camping Grounds; Water Supplies; Quarantine; Baths; Sanitary Vessels; Sanitary Jurisprudence; Sanitary Resorts; School Sanitation; Sewage Disposal; Small-pox; Soil Drainage; Tenement Houses; Tuberculosis in Milch Cows, and the Danger Therefrom; Vaccination; Prevention of Venereal Diseases; Ventilation.

Subsequent volumes are replete with advanced knowledge on practical sanitation by the most distinguished writers. It promises no abatement.

A SYNOPSIS OF SANITARY SCIENCE, AS REPRESENTED IN THE SANITARIAN, WILL BEGIN IN THE JANUARY NUMBER, AND BE CONTINUED AS A SERIAL TILL COMPLETE. BY THE EDITOR.

THE UTILITARIAN PRINCIPLES OF TAXATION AND THEIR RELATION TO ALTRUISM, BY R. S. GUERNSEY, ESQ., OF THE NEW YORK BAR, WILL BE RESUMED IN JANUARY NUMBER.

The scope of Mr. Guernsey's serial has been pretty well indicated by the eight articles which have already appeared in THE SANITARIAN during the year 1901. It will proceed to discuss the propriety and necessity of further encouraging, by appropriate taxation and legislation, the expansion of population from congested centers of large cities, by building factories and shops and local industries, by supplying family needs in suburbs of cities, encouraging home builders, and providing better and more health-

ful dwelling places for the use of families of the very large portion of the population who now dwell near their place of occupation so as to save time and the expense of travel. The tenement house laws are a step in that direction.

There appears to be no practical necessity or reason why a manufactory of clothing, for instance, should be located in the crowded portions of a city, like that on the East Side in New York City, and thus compel toilers to dwell in dark and crowded tenement houses, because near their work in crowded shops built on costly land valuable for other purposes, while there is cheaper land available in the suburbs as conveniently located for the business, and for all family purposes; also, without the time and expense of travel.

Public school accommodations and facilities are as important an inducement in the selection of a family residence as is the occupation of the members of a household. In every ten thousand of the inhabitants of New York City there are 3,376 children over one year of age and under fifteen. School facilities may be the cause of aiding not only the establishment of shops, etc., but also the building of tenement houses. These questions should also be taken into consideration in the building of bridges, tunnels, and in transit facilities. New business centers that now exist, in many matters can now be advantageously relegated to the suburbs, that are waiting to be appropriated for the benefit of the people.

WHISKY AND TOBACCO.

The word whisky is here used in its generic sense, with reference to all alcoholic liquors—

We have but just had occasion, in review of "Substitutes for the Saloon," (previous number) to express gratification at the decrease of excessive drinking in New York, as shown by the police records for a series of years. Alike gratifying is the Thirty-sixth Annual Report of the National Temperance Society, 1901, which with evident enthusiasm reports:

"The fact is the saloon is doomed. Twentieth century civilization will not tolerate it long. Already the saloon is becoming year by year more generally recognized by the American people and their highest courts as an immoral institution, and a political plague spot. The time may be far off, but it is coming when the retail liquor business in the form of the saloon will be declared by the courts to be immoral, contrary to the public peace and welfare, a breeding place of vice and vagrancy, a rendezvous for the evil disposed, and the foes generally of good government.

"This is why, when Galveston was swept by the fearful onslaught of wind and wave, and the city lay desolate, that the authorities issued an order to close the saloons. This is why the local authorities at Shenandoah, Pa., when an outbreak was threatened in that quarter between the soldiers and the striking miners, issued the same order, 'Close the saloons.' Not the churches, not the schools, not the shoe shops, not dry goods stores, none of these, but only the saloons. These authorities looked upon the saloon as a natural breeder of crime, violence and disorder, and the day is coming when the highest court of the land will declare that Legislatures have no right or power to license such a business.

"During the past year there has been a notable advance in the attitude of business firms as to the use of intoxicants on the part of employees. Never was there so strong a business instinct among large employers that sobriety is absolutely necessary, and must be insisted upon.

"The time is coming when the only opening for the ambitious man who drinks will be in politics. It is rapidly becoming so now. Private employers dare not trust their business to the man who drinks. Great corporations dare not. He is not wanted on the railroads. The steamship lines have cast him out, and as for banks, they will have none of him. Only the people, long suffering and generous, remain as his resource. For this reason municipal government is his specialty, and while this patience of the people lasts our cities will breed scandals as naturally as our swamps breed malaria.

"Some of the great railroads during the past year have adopted rules against the use of intoxicants by their employees that are very stringent, forbidding their workmen even to enter a place where liquors are sold. Some refuse to employ men who either drink or smoke cigarettes, others again have taken active steps to remove the temptation of the saloons out of the way of their employees."

The "Nation" crusade in Kansas is referred to as evidence of public opinion against the existence of saloons generally, and there in particular, because they exist contrary to law. Hence the tolerance of Mrs. Nation's crusade. Statistics are adduced on the relation of the saloon to drunkenness, pauperism, insanity and crime from the report of the Bureau of Statistics of Labor of Massachusetts, under the authority of an Act passed by the Legislature in 1894.

The collection of information occupied twelve months, closing with August, 1895. The official report shows that in the license

cities and towns 36.24 arrests for drunkenness to every 1,000 of the population; the no-license communities 9.94 such arrests to every 1,000 of the population. Arrests for offenses other than drunkenness were 22.34 to each 1,000 of the population in the license cities and towns; in the no-license cities and towns they were 10.26 to every 1,000 of the population.

Out of all convictions for crime during the year under review, about 66 in every 100 were for drunkenness. In nearly 82 cases in every 100 the offender was under the influence of liquor at the time that the offense was committed. In more than 84 cases in every 100 the intemperate habits of the offender led to a condition which induced the crime. Disregarding the convictions directly for drunkenness, it appears that intemperance was responsible for more than one-half of the remaining cases of crime. Finally, excluding minors, the tables show that of every 100 persons convicted of crime during the year 96.44 per cent. were addicted to the use of liquor.

The Anti-Canteen Law is referred to as a great victory for truth and righteousness, as well as a vindication of the position all along taken by the National Temperance Society as to the sale of drink in the army, as well as its attitude to the interpretation placed upon the first anti-canteen law by the then Attorney-General Griggs, seeing that the second law was virtually the same as the first.

"The action of the American Congress prohibiting the sale of drink in the army, the encouragement given by the British to the establishment of temperance canteens and the formation of total abstinence societies in the army, the measures taken by the French Government to protect its soldiers from drunkenness, and the recommendations of the Russian Commission to the Government to banish drink from its army and encourage total abstinence, all show that a mighty revolution has been effected in relation to the use of drink by soldiers and gives great encouragement to the friends of temperance."

Evidence is adduced against the alleged increase of drunkenness among the soldiers at Fort Sheridan, near Chicago; Fort Wayne, near Detroit; Fort Meyer, in Virginia, and some other army posts in consequence of the anti-canteen law, and the contrary effects vouched for at some of these as well as at other posts; the evidence altogether justifying the conclusion of General Miles, in his recent report, "that no injury has resulted thereby, and that the law has in the main been beneficial."

Against the Cigarette eleven States now have laws. The New Hampshire Legislature prohibits the making or selling of any kind of cigarette. To give a minor a cigarette is also illegal. Recent legislation in North Carolina says that no cigarettes shall be sold or given to those not twenty-one years of age.

The Chicago & Rock Island Railroad has issued an order which practically says that no one shall be employed by the company who is addicted to cigarettes. Vice-President and General Manager H. A. Parker said the other day: "In my judgment it is impossible for a cigarette smoker to make a good railroad man. As a rule, cigarette smokers are dull and half asleep most of the time. These are not the kind of men the Rock Island wants to operate its trains and its great system, which is daily responsible for the lives of thousands of people."

The Michigan City Division of the Lake Erie & Western branch of the Lake Shore has followed the lead of the Rock Island in prohibiting the use of cigarettes among its employees. I. W. Kurtz, master mechanic of the division, has adopted a rule which provides for the exclusion from employment on the road and shops under his jurisdiction of any man or boy who smokes cigarettes. No exception is made to this regulation.

Apropos to the foregoing, Dr. Alexander R. Becker, of Seattle, Wash., in a recent issue of the "Philadelphia Medical Journal," while advocating, or at least approving, the use of tobacco, urges that: "Tobacco in all forms ought to be absolutely prohibited to boys of less than 18 or 20; (2) adulterations of tobacco ought to be rigidly ferreted out and punished under laws of Congress; (3) there is a small minority of men to whom tobacco is more or less harmful, and they should refrain from it—but without attempting to stretch or squeeze all the rest of mankind into their Procrustean limit. There are those who have idiosyncrasies—who cannot take opium or quinine or belladonna without harm; in whom shellfish cause urticaria; or a plate of strawberries will produce as sharp an attack of gout as a bottle of Burgundy. But shall any of these small minorities rule the great normal majority? Not in this free country—although it is here, so far more than elsewhere, that they attempt it in so many directions.

"And to those physicians who speak and write unadvisedly, I would only say: 'Brethren, study and still study, so that you may teach out of knowledge and not prejudice' "—knowledge of man's power to resist more or less effectually, but always subject to irreparable results from bad habits, certainly not from knowledge of

the physiological disturbances of the human organism in conflict with habits antagonistic to the maintenance of health.

The absurd suggestion that the recognized ill-effects of tobacco are due to the admixture of dried cabbage leaves or other additions to stock is equally inconsistent with physiological knowledge. It is on the same plane as the alleged ill-effects of adulterants to alcoholic liquors by those who suffer from their use. None have ever been discovered that are comparable in potency of ill effects with alcohol, the essential quality of all such liquors. And so it is with the *nicotine* of tobacco. Insomuch that the adulterants common to it rather tend to lessen than to add to its ill-effects. Moreover, that the use of cigarettes made of discarded cigar stumps that have been sucked and partially deprived of their potency is less liable to be followed by ill-effects than the use of those made of pure tobacco. It is for this reason doubtless that the gamins who smoke cigarettes of the cheaper sort rarely suffer from their use; while on the contrary, boys with pocket-money to spare, and who use the "best" quality, suffer accordingly.

Why "tobacco in all its forms ought to be absolutely prohibited to boys of less than 18 or 20," and why it is so particularly injurious to them more than to adults, without regard to idiosyncracies, is doubtless due to overdosage. All physicians know that the dose of medicine for children and youths, as compared with the dose for adults, is less proportional to age in the inverse ratio; and that this proportion is particularly urgent in the use of narcotics and other depressents, of which nicotine is one of the most potent. Yet the lad or youth who draws the volatile products from the burning cigarette, cigar or pipe, commonly draws quite as much as the adult. Moreover, the absorptive energy of the mucous membrane of the mouth, nose and throat of the growing subject is greater than that of the adult, insomuch as even, with equal exposure, to take up more than the adult.

The ill-effects of tobacco are manifold, and far from being confined to the throat and bronchial tubes, in either adults or minors, and are not always easy of discovery even by the skilled diagnostician. But among schoolboys they may be suspected, and are most commonly discovered among the alleged-to-be sufferers from overstudy who are losing their power of application; subject to headache, loss of memory, general indisposition, dryness of the throat and thirst, lassitude, loss of appetite, dyspepsia, palpitation, disturbed sleep, etc. These are common indications, and are scarcely less common among adults who use tobacco to excess.

MILK IN PARIS AND BERLIN.

Some Frenchmen, particularly bicyclists, after having for some time been drinking milk in Paris, have had their faith rudely shaken, and discontinued on learning that out of 376 samples recently analyzed only 90 were good. The fact that particular samples were examined at the official laboratory shows that the suspicion that they were of bad quality had been previously entertained. As a set-off to these samples of milk, it is stated that butter and cheese, on the one hand, and tea and coffee on the other, emerged triumphantly from the ordeal.

In Germany an attempt was recently made on the part of the Agrarians of the Province of Brandenburg to take the supply of milk to Berlin and its suburbs out of the hands of the retail dealers, and to monopolize the trade for themselves. The result was that nearly every family in Berlin was put on a short "ration," for the ordinary milkmen could not obtain the whole of their usual supply for their customers, but now the retailers have taken precautions partially to tide over their difficulties, and their customers are supporting them. At first it was feared that the infants and children of the city would suffer grievously, and that their grown-up sisters and mothers and other female relatives would have to deny themselves the whipped cream at the pastry cooks', of which they are so fond, to say nothing of the cups of coffee at the various cafés that would have to be drunk without milk. Happily, all these apprehensions were not realized, and it is now believed that the attack of the Agrarians will end in a fiasco. The good that will accrue from the quarrel, it is supposed, will be that the retailers of milk will endeavor to supply their customers with really good and absolutely unadulterated milk.

EGGS FROZEN HARD.

The preservation of eggs in bulk in cold storage is a new wrinkle that is coming into extensive use. This scheme was devised by the manager of one of the largest biscuit manufactories in the United States, and as a result it has been adopted at numerous large bakeries, hotels and restaurants, where the eggs are used whites and yelks as a whole. The manager in question, whose factory was at that time using between thirty and forty thousand dozens of eggs per annum, noticed that in the fall and winter eggs lose some of the freshness they have in the spring. The requirements of the business demand an egg that has its original fresh, rich and meaty flavor, and one that will beat up light. Instead

of storing the eggs in cases in cold storage, the experiment was made of breaking the eggs, as soon as they arrived from the West, into cans holding about five gallons, or about 35 dozens each, and freezing the mass solid by refrigeration, and holding it in that condition. When wanted the frozen eggs are weighed out by the pound, or measured as a liquid.

LEPROSY AND THE MOSQUITO.

The spread of leprosy in the Hawaiian Islands ("Journal American Medical Association," October 26, 1901) is attributed to some extent to the mosquito by the local health authorities. There are cases that occur that are otherwise unaccountable, a fact that will hardly increase the mental quietude of those who are mosquito-bitten in a country where leprosy exists. Of course, this mode of infection must be extremely rare, for mosquito bites are common, and these unaccountable cases are few in number. It seems probable that the indictment against the mosquito will be, as time elapses, a much heavier one than has been as yet conceived. It is the most efficient little inoculating machine that was ever contrived, and it seems to have a constitution suited to take up and carry about a number of uncomfortable things for the human species. It is said that it did not exist in some at least of the Pacific Islands originally, but was introduced after their discovery by white men. Herman Melville, in one of his works that is not altogether fiction, attributes its introduction to the Society Islands to a whaler, who, out of spite against some natives, landed a cask of larva-breeding fresh water on one of the islands. If this is true it has turned out to be a veritable Pandora's box to the natives, with far greater possibilities of evil than he in his malice designed. At present malaria, leprosy, elephantiasis and probably other mosquito-borne diseases prevail locally or universally in the islands, and it would be an interesting study to trace up their medical history in all the different groups so as to determine how far the contact with civilization has been their casual factor.

INTERNATIONAL SANITARY REGULATIONS.

At the Pan-American Congress, City of Mexico, a project on international sanitary regulations was submitted. It reviews the recent scientific discoveries and concludes with the resolutions that follow. It is observed that the solution of the problem for avoiding the propagation of the principal epidemic has been modified in accordance with the continual progress of science, and therefore

in view of the discoveries since the first Pan-American Congress, in 1890, it is to be desired that its recommendations be repondered, and that other measures be proposed more in accord with present progress, and in harmony with the necessities of maritime and terrestrial communications, development of which has attained such enormous proportions and will undoubtedly attain still greater. We therefore propose that the Pan-American Congress approve the following projected resolutions:

That the second International American Congress recommends to the nations represented to enter into obligatory sanitary conventions in accordance with the following conditions:

First—That a strict quarantine of all kinds of merchandise and commercial articles and vehicles of transportation in maritime and inland traffic between the ports and territories of the contracting countries shall be abolished.

Second—That a quarantine of observation may be imposed on vessels transporting passengers, in order that sanitary inspection may take place on board ship; but vessels shall not be detained on that account for a period exceeding forty-eight hours.

Third—The object of the quarantine observation is to isolate such persons as may be suffering with contagious diseases, such isolation taking place either on board vessel or in lazarettos or hospitals; and also to have the opportunity of watching carefully such passengers as may be suspected after medical inspection has taken place at the point of arrival.

Fourth—On passenger trains from an infected place, and which enter two or more different countries, the quarantine of observation cannot exceed at each of the boundary lines the necessary time for medical inspection, which should not take longer than four hours, during which the sick shall be taken to the hospital, and, if necessary, the car or compartment where the patient has travelled shall be disinfected.

Fifth—Passengers and freight coming from a clean and healthy point, but passing through an infected place without stopping at such place any longer than is necessary for the continuance of a trip, shall not be subject to a quarantine of observation, nor to any other sanitary formalities, at their destination.

Sixth—It is specially recommended to all nations of the American continent that they adopt hygienic systems of sewerage and pure water, especially in all their ports and maritime towns, as the most efficacious prophylactic means against the propagation of contagious diseases.

YELLOW FEVER INSTITUTE.

The following New Orleans physicians have been selected as civilian members of the Yellow Fever Institute, created by Act of Congress in March last, and placed in charge of the United States Marine-Hospital Service: Drs. Felix Formento, Henry A. Veazie and Lucien F. Salomon, and Professor Beyer of Tulane University. The Institute will be divided into four sections, the first of which will concern itself with the history and statistics of the disease, including the relation of the slave trade and modern sanitation. Section B will be occupied with the cause of the disease, while Section C will specially study its transmission by the mosquito. This insect will be studied from all points. Its life and habits will be thoroughly investigated, and the question whether its progeny may be infected through the parent insect, and whether infection may be conveyed by other than its means, worked out. Section D will consider quarantine and treatment. The main lines of study of this section will be whether disinfection of baggage is necessary to prevent the spread of the disease; the treatment of the patient, the immunity of individuals and of races, individual prophylaxis and communal prophylaxis by means of sanitation.

OUR NEW WINTER RESORTS.

Porto Rico lies about seventy-one miles west of the Danish islands St. Thomas and St. Croix, and is the most eastwardly of the chain of the large islands known as the Leeward Islands. Although the trade winds sweep the north and south coasts from east to west, these winds are so much broken by the higher islands westward that the climate of Porto Rico (except in the mountainous regions) is more sultry than that of the further Windward Islands.

A lofty range of mountains covered with tropical forests, and intersected by numerous deep ravines, runs through the center of the island, beginning from the northeast. The climate on these interior elevated plateaux is said to be delightful at all seasons of the year. *San Juan,* the principal town, is well laid out, and under American control has become one of the most healthful cities in the West Indies.

As is customary in most Spanish cities, there is a large public square, well paved with stone and shaded by many fine trees. This square is the fashionable promenade, and on Sunday afternoons, when the military band plays, one may see all the élite in the interesting costumes peculiar to the race.

The public buildings partly surround this square, and on one side

runs the principal street where is also the largest hotel and best cafés.

The total population of the town is about 20,000. A fine military road runs out from the city, gradually climbing the mountains, and beautiful drives though wild tropical scenery, as well as through sugar, coffee and orange plantations, can be taken by tourists during even a short stay. There is an unlimited opportunity to show what American progress can accomplish, and it will undoubtedly be a source of great interest to thousands of American citizens to visit this island.

It is accessible by the Quebec Steamship Company's ships from New York weekly, by which round tour cruises through the Windward Islands have been arranged for the winter.

Within a week from New York these delightful and healthful resorts may be reached. There one may enjoy in January the climate of June, may recline beneath palms and plantains, and eat the luscious fruits of the tropics, as they fall from the stem; oranges, bananas, pineapples, sapadillas, sour-sops, guavas, limes, lemons, mangoes, custard-apples, cocoanuts, bread-fruit—all these, and more, await the voyager to these islands.

On the special tours, by the above-named steamship company's ships, arrangements will be made in advance by the company's agents for the landing and embarking of passengers at each island, the expense of which will be borne by the company: as the passengers land from roadsteads in boats, at all the islands but one, and as there are more than twenty landings, this is an item of considerable amount, which is included in the cost of the ticket. If the company's arrangements are followed, all disagreements between the boatmen and passengers are obviated. The cuisine is of the highest character, and supplies of all descriptions the best that the New York and West India markets afford. The chief stewards are of French nationality, and have been many years in the company's service.

Passengers can cable from each island to all parts of the world. It is recommended that a cable address be registered with the telegraph company at the tourist's home, so that one word will suffice for the address; also that a code with friends be arranged, as the cost of each word cabled to and from the West Indies is $1.00. Letters for passengers on the cruises can be sent to the care of the company's agents, Messrs. A. E. Outerbridge & Co., 39 Broadway, New York, and such letters will be forwarded to meet the cruisers where possible.

SUGAR.

NEW YORK, October 19th, 1901.

Editor of THE SANITARIAN, Brooklyn, N. Y.:

DEAR SIR: As a good deal has recently appeared in print regarding the consumption of sugar in this country, the various sources from which it is obtained, the amount of duty paid thereon, etc., the following facts and figures will, we believe, be of interest to your readers:

"The total consumption of sugar in the United States last year was 2,219,847 tons, and based on the average increase of 6.34 per cent. during the past 19 years, the consumption this year should be 2,360,585 tons. Of this quantity 1,000,000 tons in round figures will come from American sources, say Louisiana being able to produce 350,000 tons, United States beet factories 150,000, Hawaii, 350,000, and Porto Rico, 150,000, all being free of duty, leaving 1,360,585 tons to come from other sources, and on which duty is paid. The average duty assessed is $36 per ton, or a total of $48,981,060. The price of all the sugar consumed, however, being enhanced to the extent of the duty of $36 per ton, or a total of $84,981,060, it is evident that $36,000,000 additional is paid by the people in order to provide the Government with forty-nine millions for revenue, of which the Government is not now in need. If the duty is taken off Cuba sugar, the benefit of eighty-five millions goes to the people.

"On October 8th the quotation for Cuba Centrifugal Sugar, 96° test, free on board Cuba, was 1.96c. per lb., duty on same amounts to 1.685c.—equivalent to 86 per cent. ad valorem.

"Yours truly,

"WILLETT & GRAY,

"Sugar Statisticians."

THE ANTI-POLYGAMY AMENDMENT.

The Fifty-sixth Congress adjourned without submitting a constitutional amendment prohibiting the practice of polygamy.

In order to insure the submission of an anti-polygamy constitutional amendment in the near future, the Interdenominational Council of Women for Christian and Patriotic Service earnestly ask:

That all ecclesiastical bodies, all reform organizations, and all women's societies of every description, which are in sympathy with this movement, will pass resolutions in favor of such an amendment, and send copies of such resolutions to both the United States

Senators from their State and to the Representative in Congress from their district; and, as far as possible, appoint committees to wait upon the members of the House of Representatives from their respective districts and ask them to pledge themselves to work and vote for the submission of a Constitutional Amendment, forever forbidding polygamy and polygamous cohabitation throughout the United States.

Mrs. Darwin R. James, President.

Mrs. F. C. Morgan, Treasurer, 947 Lexington avenue, New York City.

Wm. R. Campbell, Field Secretary and General Manager of the Movement to Secure an Anti-Polygamy Constitutional Amendment, No. 156 Fifth avenue, New York City, Room 725.

LIVERPOOL MEDICAL FELLOWSHIP OPEN TO AMERICANS.

James Boyle, United States Consul, reports, April 12, 1901, that a prominent Liverpool shipowner, well known in the United States, has just founded an "international fellowship" in University College, Liverpool, open for competition by members of American universities and medical schools. The following are the provisional regulations governing the fellowship:

(1) This fellowship has been founded by William Johnston, shipowner, of Liverpool, to commemorate the late John W. Garrett, of Baltimore, United States, and shall be called "The John W. Garrett International Fellowship in Pathology and Physiology." The value of the fellowship shall be $486 (£100) a year.

(2) The fellowship shall be open to members of universities and medical schools in the United States, without, however, absolutely precluding members of other foreign schools.

(3) The fellow shall be elected by the faculty, on the nomination of the professors of pathology and physiology.

(4) The fellow shall be elected for one year, and shall be eligible for re-election.

(5) The fellow shall devote himself to research in physiology or pathology and bacteriology, under the direction of the professors of physiology and pathology. He shall undertake no work which shall in any way interfere with these duties.

(6) The work shall be done in the Thompson-Yates laboratories of University College, Liverpool, but, by special permission from the faculty, the fellow may be allowed to follow his investigations elsewhere.

(7) The expenses of the research shall be met out of the funds of the laboratory, under the direction of the professors of physiology and pathology.

Mr. Johnston has also founded a "colonial fellowship" in pathology and bacteriology, of the same value as the "international fellowship," open to members of British colonial universities and medical colleges.

IMPROVED GERMAN LIFE-SAVING APPARATUS.

Consul-General Guenther, of Frankfort, March 20, 1901 ("Consular Reports," 250), informs the Department of State of a recent improvement in the means for saving life at sea.

It has often happened, says the Consul-General, that on account of darkness, life belts could not be seen when thrown to persons who had fallen overboard at night. Buoys, with life belts attached, and supplied with eight-candle-power electric lights, have been constructed heretofore, but their use was confined to vessels equipped with electric-lighting plants, and their heavy weight, requiring three or four men to handle them, was a serious handicap.

The new apparatus weighs but 33 pounds, and produces a light equal to 150 candle power. The buoy is of globular form, carries from two to four life belts, and supports a long cylinder of sheet tin having twelve compartments filled with carbide of calcium. These compartments are arranged at different elevations. When the apparatus is thrown into the sea, the water passes through perforations in the bottom of the cylinder, and, coming in contact with the carbide, generates acetylene gas. Each compartment is connected with a burner by a pipe, proper valves preventing the escape of the gas other than through the burner. When the volume of gas in the cylinder decreases, hydrostatic pressure opens the valves and allows water to enter the next compartment to generate an additional supply of gas. The gas is lighted electrically, and ignition takes place in about twenty-five seconds after the buoy is thrown into the sea. The flame is protected from the wind by glass, and burns steadily and with great intensity for three or four hours.

Cleaning and filling the apparatus requires only a few minutes. The cost of a charge is about 12 cents.

The advantages claimed for the invention, adds Mr. Guenther, are: First, that it can be used on all kinds of vessels; second, that it may be used for general lighting purposes; third, its cheapness and light weight.

ENNO SANDER PRIZE FOR 1901-1902

Has been generously increased by its founder to consist of a gold medal, valued at $100, and $100 in cash.

The subject for this year is *"The Most Practicable Organization for the Medical Department of the United States Army in Active Service.*

Conditions of the Competition.

(1) Competition is open to all persons eligible to active or associate membership in the Association of Military Surgeons of the United States.

(2) The prize will be awarded upon the recommendation of a Board of Award selected by the Executive Committee. The Board will determine upon the essay to which the prize shall be awarded. and will also recommend such of the other papers submitted as it may see fit, for honorable mention.

(3) In fixing the precedence of the essays submitted, the Board will take into consideration—primarily—originality, comprehensiveness, and the practicability and utility of the opinions advanced, and—secondarily—literary character.

(4) Essays will consist of not less than ten thousand, nor more than twenty thousand, words, exclusive of tables.

(5) Each competitor will send three typewritten copies of his essay in a sealed envelope to the secretary of the association, so as to reach that officer on or before February 28, 1902.

(6) The essay shall contain nothing to indicate the identity of the author. Each one, however, will be authenticated by a nom de plume, a copy of which shall, at the same time as the essay, be transmitted to the secretary in a sealed envelope, together with the author's name, rank and address.

(7) The envelope containing the name of the successful competitor will be publicly opened at the next succeeding annual meeting of the association, and the prize thereupon awarded,

(8) The successful essay becomes the property of the Association of Military Surgeons of the United States, and will appear in its publications.

Board of Award, 1901-1902.

Honorable William Cary Sanger, Assistant Secretary of War.

Brigadier General George Miller Sternberg, Surgeon-General, U. S. Army, and a distinguished officer of the line, to be announced later.

John Van Rensselaer Hoff, President.

James Evelyn Pilcher, Secretary, Carlisle, Pa.

MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

OBITUARY.

ALBERT L. GIHON, A. M., M. D., Medical Director U. S. Navy, (retired), a much esteemed collaborator of THE SANITARIAN, died of apoplexy in Roosevelt Hospital, New York, November 17, 1901.

Dr. Gihon was born in Philadelphia, September 28, 1833. He was educated at Philadelphia and Princeton College. From 1853 to 1854 he was Professor of Chemistry and Toxicology in the Philadelphia College of Medicine and Surgery. He entered the navy as assistant surgeon May 1, 1855. His first duty was on board receiving-ship Union, Philadelphia navy yard; next, sloop-of-war Levant, East India Station, 1855 to 1858; subsequently (on the same station) transferred to the sloop-of-war Portsmouth, taking part in the battle which resulted in the capture of the Barrier forts in November of the following year at Canton, China. He served in various ships until 1860, when he was assigned to the Brooklyn Naval Hospital for a year. Promoted to surgeon, 1861; medical inspector, 1872; medical director, 1879. Sea service, 11 years; shore or other duty, 27 years 7 months. During the last three years of the Civil War he was on the St. Louis, which did special duty as a privateer hunter.

At the close of the war he became the senior medical officer at the Portsmouth yard. He was awarded the decoration of Knight of the Military Order of Christ by the King of Portugal for his services on the Portuguese men-of-war Principe Dom Carlos and Sa da Bandeira and in the Portuguese colony at Dilly, on the island of Timor. In 1870 he became surgeon of the fleet on the European Station. Dr. Gihon designed the model hospital ship which was exhibited at the Centennial Exposition of 1876, and the ambulance cot approved and used by the navy was designed by him. In 1893 he was transferred to the post at Washington in charge of the medical headquarters. He was then senior medical officer of the navy on the active list, and was placed on the retired list in 1895, having reached the age limit of sixty-two years. Dr. Gihon was the author of an excellent book on naval hygiene, used as a text book at the Naval Academy, and many essays on sanitary subjects and climatology, most of which have been contributed to THE SANITARIAN; he was, besides, author of a number of papers on medical

and surgical subjects published in medical journals. He was a member of numerous American and foreign medical, historical and scientific societies; a fellow and ex-president of the American Academy of Medicine, American Public Health Association; vice-president of the Association of Military Surgery.

Dr. Gihon was married just before the outbreak of the Civil War to Clara Montfort, daughter of Charles H. Campfield, Esq., of Savannah, Ga. Their married life was saddened by the death of their only daughter, an accomplished young lady, in 1885. Mrs. Gihon and two sons, Albert Dakin and Clarence Montfort, survive.

NEW YORK.—Latest bulletin of State Department of Health received was for August.

City of New York (estimated population middle of year 1901, 3,536,517) reports for the four weeks ending November 2: Total deaths, 4,667; death rate, 17.29; deaths from diphtheria and croup, 131; typhoid fever, 95; diarrhœal diseases, 411; phthisis, 582; smallpox, 10. Contagious and infectious diseases reported: Phthisis 1,002; diphtheria and croup, 892; measles, 409; scarlet fever, 475; smallpox, 24; typhoid fever, 349.

Manhattan, 1,850,093: Total deaths, 2,543; death rate, 17.79.

The Bronx, 200,507: Total deaths, 261; death rate, 19.40.

Brooklyn, 1,166,582: Total deaths, 334; death rate, 16.02.

Queens, 152,999: Total deaths, 208; death rate, 16.66.

Richmond, 67,021: Total deaths, 90; death rate, 17.03.

The unusual prevalence of typhoid fever in both Manhattan and Brooklyn is significant of water pollution, calling for a large pecuniary outlay, and promptly, would the city get rid of the disgrace.

Moreover, school sanitation is greatly neglected, particularly in Brooklyn—even after infectious disease is known to have occurred, disinfection neglected.

Twentieth Annual Report of the State Board, for the year 1899; pp. 555, and additional volume of maps. It comprises in detail the work and states results as summed up in the monthly bulletins, from which THE SANITARIAN has made extracts monthly; promptly investigated and aided in the suppression of epidemic diseases in the State; by surveys, plans, and other means promoted sewerage, and in the protection of water supplies; continued chemical examinations of water, food and drugs, with a view to suppressing adulterations, and the prevention of tuberculosis by condemning and destroying tuberculous cattle.

The number of deaths from all causes reported during the year was 121,821; death rate, 17.3 against an estimated average for the past ten years of 17.2, that of 1898 being 18. 35,386 of the deaths, or 29 per cent., were under five years of age. 12 per cent. were from zymotic diseases, of which 1,604 were from typhoid fever; 2,786 from diphtheria; 730 from scarlet fever; 756 from measles; 886 from whooping cough; 21 from smallpox. 7,000 of the deaths are attributed to epidemic influenza (grippe), which was in progress during the last two months of the previous year, the entire epidemic having a mortality of 8,000. Deaths reported from consumption, 13,412—10.01 per cent. of the total mortality. From cancer, 4,533, 1,125 more than the average for the last ten years.

THE CONFERENCE OF THE HEALTH OFFICERS OF THE STATE.

At the meeting of the Board of Health, Binghamton, November 8th, Health Officer Hix reported of the Health Officers' Conference in Albany, October 24-25, as follows:

"This was the first meeting of the kind ever held in the State, and was so largely attended that it was the sense of those present that similar meetings should be held yearly, and held in different localities. I took the responsibility of inviting the conference to meet in Binghamton, N. Y., but the convention will probably be held at Buffalo. I received an inspiration from the meeting that I hope will be of value to this city. The conference was composed of a very representative number of men. Members of boards of health, registrars and health officers from nearly every city and large town in the State were present.

"The first address was by Robert V. Taylor, Esq., and I could not learn that he advanced any especial new points of the sanitary law. The next paper was by Prof. H. M. Biggs, and the only thing especially worthy of note in his address was that he had confirmed Koch's report of the immunity of the cow to the human tubercular germ. The paper by Dr. Curtiss was especially instructive. It dealt mainly with the diagnosis of scarlet fever and smallpox, stating that the last epidemic of these diseases had been of an unusually mild character. He very strongly advocated the protective power of vaccination. Dr. Pease and Dr. Bloomer outlined the work of the new bacteriological and pathological laboratories of the State Department. Their work will affect this department only. After about the first of January next they will, at the request of your health officer, furnish him with diphtheria antitoxine free, to

be used only for indigent patients. Prof. O. H. Landreth gave a comprehensive paper on sewage disposal.

"The paper entitled 'State and Municipal Milk Problem' was the one which created the greatest amount of interest. It was presented by Dr. Ernest Wende, Health Commissioner of Buffalo. This paper was discussed by many members of the conference, especially by Dr. Moore of Syracuse, and every one expressed himself as feeling the great importance of a careful supervision of this most valuable article of diet. A number of cities are now inspecting dairies, but a very few in a complete manner. The larger cities cannot inspect the herds, as they are too many miles away, but cities like Binghamton, which have all the herds near, are securing a dairy system inspection. While passing through Utica I visited the health department of that city. I there learned that their board of health was instituting a system of dairy inspection, and so far had inspected 178 dairies, and out of that number they reported forty-eight positively bad, and in almost every dairy some beneficial changes were necessary. In some cases the water for cattle was drawn from wells situated in the cow yard, and in other cases the water to cleanse utensils was drawn from wells located near outhouses and pig sties.

"It matters not whether Koch's theory is correct, it is certain that a cow can only be healthy when properly housed and fed, and that only a healthy cow can give pure milk, and it is further demonstrated that milk is very liable to become infected and propagate contagion. Dr. Wende reported a number of instances where an epidemic of contagious disease was traced to the milk supply, the milk either being contaminated by sick people or unsanitary surroundings. I wish further to state that the subject is growing so important that in England it is national, insomuch that they have appointed a committee to investigate this subject. With these facts before the people, it would not seem any one would doubt for a minute the necessity of the appointment of a dairy inspector, and I would especially appeal to your honorable body asking if it were not possible that some way might be outlined so that this great work could be carried on this winter for this city."

On the conclusion of Dr. Hix's report, the following resolution was offered:

"Resolved, That this board requests the State Health Commission to appoint the assistant sanitary inspector, P. A. Greenmun, of this board, a State Inspector for the purpose of inspecting milk herds and dairies."

As there is no salary attached to this office, it is thought that the appointment will be made. Last spring an appointment of a milk and food inspector was made, but the office was abolished after two months. The objection was raised that being a city office, the official had no jurisdiction outside the city. With Mr. Greenmun as a State Inspector, he can go anywhere to the source of the city's milk and food supply, and insist on proper sanitary arrangements.

CALIFORNIA.—San Francisco, 360,000. Report for August: Total deaths, 478; death rate, 15.92; from cerebro-spinal meningitis, 2; typhoid fever, 6; malarial fever, 1; scarlet fever, 1; measles, 2; whooping cough, 2, bubonic plague, 1; diarrhœal diseases, 4; acute respiratory diseases, 45; consumption, 51, cancer, 22.

Los Angeles, 102,479. Report for September: Total deaths, 147; death rate, 14.34; deaths under five years, 18; from cerebro-spinal meningitis, 4; typhoid fever, 2; diarrhœal diseases, 5; acute respiratory diseases, 9; consumption, 28; cancer, 12.

CONNECTICUT.—The State Board of Health Bulletin reports for September: Total deaths in 168 towns, with an aggregate population of 908,355, 1,235; death rates, 17.1 for the large towns; 14.0 for the small towns, and 16.3 for the State; deaths under five years, 409; from cerebro-spinal meningitis, 3; typhoid fever, 22; scarlet fever, 4; malarial diseases, 6; measles, 1; whooping cough, 15; croup and diphtheria, 24; diarrhœal diseases, 220; acute respiratory diseases, 66; consumption, 101.

DISTRICT OF COLUMBIA, 278,880. Report for five weeks, ending October 26: Total deaths, 440; death rate, 20.51; deaths under five years, 129; from typhoid fever, 20; scarlet fever, 3; whooping cough, 8; croup and diptheria, 11; diarrhœal diseases, 25; acute respiratory diseases, 37; consumption, 63; cancer, 23.

Sanitary Improvement.

The report of the Washington Sanitary Improvement Company shows the growth of that organization since March, 1898, when its assets were $35,959.05, to March, 1901, when the assets were $138,344.22, with a surplus of $4,672.76. The company was awarded a gold medal at the Paris Exposition last year. In concluding his report, the president, Surgeon-General George M. Sternberg, of the United States Army, says:

"While in this report I have laid special stress upon the suc-

cess of the company from a financial point of view, it must not be supposed that we have lost sight of the philanthropic motives which led to its organization. As stated in our original prospectus, 'the company aims to supply, for the present, healthful homes for the better class of wage-earners, and in doing so, hopes to establish a higher standard of sanitary dwellings at reasonable rentals for all classes.' "

ILLINOIS.—Chicago, 1,758,025. Report for August: Total deaths, 2,169; death rate, 13.88; deaths under five years, 886; from typhoid fever, 83; scarlet fever, 7; measles, 5; whooping cough, 25; croup and diphtheria, 29; diarrhœal diseases, 290; acute respiratory diseases, 145; consumption, 191; cancer, 96. Reports of smallpox throughout the State ("Chicago Post," Nov. 9) continue to pour into the office of the State Board of Health. Fifteen cases are reported from Peoria to-day—eight in four families and seven in the pesthouse. A case is also reported from Elveston, in Hancock, and one from Athens, in Menard County.

INDIANA.—The Monthly Bulletin of the State Board of Health reports for October: Total deaths, 2,614, an annual rate of 12.2. In the same month of 1900 there were 2,933 deaths, a rate of 13.7. By certain ages the deaths were for 1900 and 1901 respectively: under one year, 542 and 468; one to five inclusive, 305 and 217; sixty-five and over, 636 and 564. From certain causes the death rates are per 100,000 for 1900 and 1901 respectively: tuberculosis, 134.5 and 135.5; diphtheria, 47.8 and 24.3; typhoid fever, 89.5 and 95.6; diarrhœal diseases, 97 and 68.9; pneumonia, 63.7 and 60.4; cerebro-spinal meningitis, 26.2 and 8.9; cancer, 37.9 and 43.1; violence, 50.6 and 49.7. The comparison is in favor of 1900, and being by rates is fair.

Rural and Urban.—The number of rural deaths reported was 1,577; rate, 11.1; urban deaths, 1,007; rate, 14.4. The rates in comparing month 1900 were respectively 12.5 and 16. From certain causes the death rates per 100,000 were for rural and urban respectively: tuberculosis, 127.2 and 151.7; diphtheria, 16.9 and 38.9; typhoid fever, 103.2 and 80.7; diarrhœal diseases 65 and 75.5; pneumonia, 45.9 and 99.1; cerebro-spinal meningitis, 9.1 and 8.3; cancer, 35.3 and 54.4; violence, 38.8 and 71. The comparison by these diseases is in favor of the country, and by all diseases this is also true, as the death rates are: rural, 11.1; urban, 14.4. There were two smallpox deaths.

IOWA.—Davenport, 40,000. Reports for September: Total deaths, 37; death rate, 12.59; deaths under five years, 10; from diphtheria, 2; diarrhœal diseases, 6; acute respiratory diseases, 5; consumption, 1; cancer, 2.

KANSAS.—Smallpox reported by the Secretary of State Board of Health for September and October, 52 cases in 13 places—no deaths; for November, 244 cases in 17 places—no deaths.

KENTUCKY.—Typhoid fever is reported epidemic in Cornishville and Dugansville. Diphtheria is spreading among the pupils of the Louisville public schools at an alarming rate. One school has already been closed on account of the contagion, and others will follow if the spread of the disease is not checked.

LOUISIANA.—New Orleans, 300,000 (80,000 colored). Total deaths, 422 (173 colored); death rates, white, 13.58; colored, 25.95; total, 16.88; deaths under five years, 91 (38 colored); from typhoid fever, 16; malarial diseases, 10; scarlet fever, 2; whooping cough, 1; croup and diphtheria, 2; diarrhœal diseases, 30; acute respiratory diseases, 26; consumption, 60; cancer, 10.

Relative to the insane, the report shows 196 commitments during the year. This is a large number, and the Louisiana State Insane Asylum at Jackson has not been able to keep up with the output of lunatics in spite of the fact that it has been enlarged from time to time, so that 37 of the insane have had to be kept in the Louisiana Retreat until room can be found for them in the State Asylum.

The negroes are contributing slightly fewer lunatics to the State Asylum, in proportion to their numbers, than the whites, but the report shows a condition of affairs in regard to the sexes of which no explanation, as far as we know, has been given. Why is it that, while among the whites the men constitute more than twice as many lunatics as the women, 101 to 47, the reverse is true of the negroes, the colored female lunatics being exactly double in number those of the negro males, 32 to 16? The chances of insanity seem greatest among white men and least among negro men.

MAINE.—Portland, Nov. 1: Diphtheria is raging to a considerable degree in the western part of the city. New cases are reported every day, and every precaution is taken by the board of health to prevent the further spread of the disease.

MARYLAND.—Baltimore, 518,000 (79,000 colored). Report for September: Total deaths, 781; death rate, 18.9; deaths under five

years, 298; from typhoid fever, 18; whooping cough, 11; croup and diphtheria, 7; diarrhœal diseases, 101; acute respiratory diseases 59; consumption, 91; cancer, 26.

MASSACHUSETTS.—Boston, 573,579. Reports for August: Total deaths, 989; death rate, 20.69; deaths under five years, 457; from cerebro-spinal meningitis, 5; typhoid fever, 13; smallpox, 3; measles, 5; scarlet fever, 15; whooping cough, 8; croup and diphtheria, 12; diarrhœal diseases, 205; acute respiratory diseases, 44; consumption, 112; cancer, 46. Nov. 10.—Smallpox is reported increasingly prevalent in the city, and giving the board of health much trouble on account of the neglect of the physicians to promptly report cases.

MICHIGAN.—The Secretary of the State Board reports for October, 1901, compared with the preceding month, pneumonia, pleuritis, whooping cough and diphtheria were more prevalent, and diarrhœa, intermittent fever, dysentery, cholera morbus, cholera infantum and inflammation of the bowels were less prevalent. Compared with the average for October in the ten years, 1891 to 1900, scarlet fever, smallpox and measles were more than usually prevalent; and intermittent fever, dysentery, cholera morbus, remittent fever, diphtheria, erysipelas and cerebro-spinal meningitis were less than usually prevalent.

Of the most dangerous communicable diseases, cerebro-spinal meningitis was reported present at 4 places; measles at 30 places; whooping cough at 31 places; smallpox at 54 places; diphtheria at 85 places; scarlet fever at 186 places; consumption at 194 places; and typhoid fever at 233 places. Cerebro-spinal meningitis reported at 2 places less; measles at 5 places more; whooping cough at 11 places more; smallpox at 11 places more; diphtheria at 25 places more; scarlet fever at 59 places more; consumption at 1 place more; and typhoid fever at 22 places more, in the month of October than in the preceding month.

Port Huron, 20,000. Report for the year 1900: Total deaths, 253; death rate, 12.3; deaths under five years, 80; from cerebro-spinal meningitis, 3; typhoid fever, 11; measles, 1; whooping cough, 1; croup and diphtheria, 3; diarrhœal diseases, 20; acute respiratory diseases, 21; consumption, 20; cancer, 14.

Chief of the Bureau of Vital Statistics of the State Department reports for October 2,548 deaths; death rate, 12.6. The number of deaths for the month is 338 less than for the preced-

ing month, and 269 less than for October, 1900. There were 444 deaths of infants under one year of age, 167 deaths of children aged one to four years, inclusive, and 674 deaths of persons aged sixty-five years and over. Important causes of deaths were as follows: pulmonary tuberculosis, 158; other forms of tuberculosis, 31; typhoid fever, 88; diphtheria and croup, 49; scarlet fever, 18; measles, 2; smallpox, 2; whooping cough, 5; pneumonia, 143; diarrhœal diseases of infants under two years of age, 158; cancer, 126; accidents and violence, 190. There were also two deaths from smallpox. The principal feature of the month was the marked reduction in the mortality of infants and children as compared with the preceding month. Typhoid fever showed about the same number of deaths as in September, bue only about one-half as many as in October, 1900.

Pneumonia has begun its regular seasonal increase in importance as a cause of death. Scarlet fever also showed a considerable increase over the preceding month. Other causes of death were little changed in fatality.

MINNESOTA.—Minneapolis, 240,000. Report for September: Total deaths, 196; death rate, 8.12; deaths under five years, 50; from typhoid fever, 11; scarlet fever, 1; whooping cough, 3; croup and diphtheria, 20; diarrhœal diseases, 9; acute respiratory diseases, 13; consumption, 20; cancer, 9.

St. Paul, 165,000. Report for September: Total deaths, 122; death rate, 8.28; deaths under five years, 38; from typhoid fever, 4; scarlet fever, 1; croup and diphtheria, 8; diarrhœal diseases, 11; acute respiratory diseases, 11; consumption, 18; cancer, 9.

MISSOURI.—St. Louis, 575,200. Report for September: Total deaths, 688; death rate, 14.35; deaths under five years, 177; from typhoid fever, 24; malarial diseases, 9; scarlet fever, 6; whooping cough, 4; croup and diphtheria, 11; diarrhœal diseases, 43; acute respiratory diseases, 36; consumption, 91; cancer, 28.

The outbreak of tetanus in October, and its continued occurrence since, and from which there have been about 20 deaths, following the use of antitoxine, prepared by the city bacteriologist, is the subject of rigid inquiry. The bacteriologist has reported to the board of health his process of preparing antitoxine, as follows:

"For obtaining the diphtheria antitoxine, we inoculated a specially prepared broth with *bacillus diphtheriæ* No. 8 of Park, and grew it in an incubator at 37° C. for from 8 to 10 days. At the end of that time it is taken from the incubator; 0.4 per cent. of tricresol is add-

ed to it, and after standing twenty-four hours it is filtered through a porcelain filter. Small quantities are injected into guinea-pigs, in order to ascertain its toxic potency. If the toxine proves highly virulent, it is injected into horses in gradually increasing doses.

"Strong, healthy horses are selected, free from glanders and tuberculosis; about once every ten days increasing quantities of toxine are injected subcutaneously into them, the site of the injection being the side of the neck or the loose tissue behind the shoulder-blade. Here the hair is clipped short and the hide first washed with soap and water, and then soaked with a powerful disinfectant, consisting of a five-per-cent. carbolic acid solution containing 1 to 1,000 corrosive sublimate and 0.5 per cent. of hydrochloric acid. The injection is made with a sterile syringe. When the horse can be given large quantities of diphtheria toxine without producing decided elevation of temperature or other disturbances of health, he is ready to bleed. Our method is to shave a wide area along the side of the neck over the jugular vein; this area is thoroughly disinfected with the acid (carbolic acid solution mentioned above), and with a sterile knife an incision is made through the skin over the vein. A sterile sharp-pointed cannula, with a rubber tube attached to it, is thrust through the incision into the vein beneath, and the blood flows through the tube into specially constructed flasks, which have been steam-sterilized. The wound in the skin is stitched up and flexible collodion painted over it.

"The blood, put in an ice-chest, is allowed to clot, and when the serum separates, which takes several days, it is poured off and to it is added 0.4 per cent. of tricresol. After standing several days to "ripen," it is filtered through a sterile paper filter, and the filtered serum is mixed in definite quantities with ten times a minimal lethal dose of diphtheria toxine. The mixture is injected into guinea-pigs weighing 300 grammes, to ascertain the quantity of serum which will keep the guinea-pig from dying; ten times that amount of serum is an antitoxic unit. The number of antitoxic units in one cubic centimetre is then calculated and the serum labeled. Upon the label are written the day of bleeding and the number of units to 10 cubic centimetres of antitoxine.

"Before distribution, the serum is again filtered and put into small sterile bottles, each containing 10 cubic centimetres of serum, and corked with a sterile cork stopper. A label upon it bears the date of the bleeding and the number of antitoxic units in the bottle.

"I go to this length in explaining our methods to show the rigid aseptic precautions with which the whole procedure is surrounded. In regard to myself, I have personally selected every horse from which we have made antitoxine. I have given every injection which the horses have received since the beginning of the work. I have bled the horses throughout the whole period of the investigation, and, further, I have with very few exceptions tested every lot of serum which has left the laboratory.

"Feeling keenly the very great responsibility which has rested upon me, I have been painstaking in my endeavors to produce a high grade of antitoxic serum, and have trusted no part of the procedure to anybody, except the preparation of the diphtheria broth, which my assistant, Mr. Martin Schmidt, skilfully makes for me, and the filling of the small bottles with serum, which is the work of our careful janitor, Henry Taylor.

"The horse, Jim, seemed to be in perfect physical condition when I bled him on August 24th and September 30th. The bleeding on September 30th was followed by a decided reaction; on the following days he refused food, and began breathing with difficulty. Dr. Ellis pronounced him sick beyond recovery, with tetanus, and he was killed.

"I feel confident that the tetanus bacillus will not be found in the serum, both from the painstaking care with which it is prepared, and from the fact that it contains 0.4 per cent. of tricresol. It is, however, within the limit of probabilities that the horse may have had the tetanus bacillus latent, or slowly acting within him, some time before August 24th, and that the disease did not develop sufficiently to manifest itself until his vitality was lowered by the bleeding of September 30th. If this were so, the tetanus toxine might have been in his blood on August 24th, the date of the bleeding. If the tetanus toxine was in the horse's blood prior to August 24th, it was beyond the range of human knowledge to detect it by an inspection of the animal.

"It is a well-known fact that horses undergoing treatment for the production of diphtheria antitoxine are highly susceptible to infection with the bacillus of tetanus. We have lost six antitoxine horses with tetanus since 1895. Very respectfully,"

(Signed) "AMAND RAVOLD,
City Bacteriologist."

MONTANA.—Butte, October 18, appears to have a persistent epidemic of scarlet fever. Health Officer Leggat declared yester-

day, however, that the disease is now declining, and there need be no further apprehension. There are still a number of cases in the southwestern part of the city. He reports 34 cases during the month of September, of which number six were fatal. There were eight cases of diphtheria, one of measles, and five of small-pox. There were 86 deaths during the month—84 were white and 2 black—and 82 births.

NEW JERSEY.—Newark, 250,000. Report for four weeks ending October 26: Total deaths, 316; death rate, 16.43; deaths under five years, 115; from typhoid fever, 8; small-pox, 6; malarial fever, 1; scarlet fever, 1; whooping cough, 1; croup and diphtheria, 12; diarrhœal diseases, 24; acute respiratory diseases, 32; consumption, 36; cancer, 9.

Paterson, 108,081. Report for September: Total deaths, 159; death rate, 7.53; deaths under five years, 74; from cerebro-spinal meningitis, 2; typhoid fever, 4; whooping cough, 1; diarrhœal diseases, 29; acute respiratory diseases, 10; consumption, 13; cancer, 6.

NORTH CAROLINA.—The State Board of Health Bulletin reports for September: Total deaths in twenty-three towns, with an aggregate population of 125,470 (50,550 colored), 200 (112 colored); death rates, white, 14.5; colored, 26.6; total, 19.4; deaths under five years, 85; from typhoid fever, 11; scarlet fever, 1; malarial fever, 24; diphtheria, 2; whooping cough, 4; pneumonia, 10; consumption, 18; diseases of nervous system, 27; circulatory system, 14; diarrhœal diseases, 16; violence, 6; other causes, 67.

AN APPRECIATIVE BOARD OF COUNTY COMMISSIONERS.

An incident which calls to mind the action of the Board of Aldermen of Somerville, Mass., a few months ago, and of a pusillanimous official, referred to in our November issue:

Dr. I. E. Green, Superintendent of Health, Halifax County, N. C., allowed a mere nominal salary, unworthy of mention, for his services, on the spread of smallpox into his county, while it was not his duty under the law to give medical attention to those having the disease, yet, with few exceptions, such attention as they received was given by him, the majority having the disease being unable to obtain other medical attention.

From July, 1899, to January 26, 1900, the disease existed continuously in one or the other of the following townships: Little-

ton, Halifax, Palmyra, Scotland Neck and Brinkleyville, and almost his entire time was taken up in attending to the same and preventing its further spread, and as a consequence, he had hardly time to attend to his practice in the town of Weldon, and was forced to give up during that period almost the whole of his country practice, in addition to which he was compelled to undergo great expense; but he never filed any account for personal expenses borne by him while he was performing these duties; but, in his report, submits that he paid out more than $150. Whenever notified by physician or citizen of suspected cases, he had promptly made examination, and that there were more than one hundred suspects; believing that it was less expense to the county to take steps in the beginning rather than to wait until the disease had made progress, thereby rendering it extremely difficult to confine and eradicate it.

Dr. Richard H. Lewis, Secretary of the State Board of Health, having knowledge of Dr. Green's work, addressed a letter to the Board of Commissioners of Halifax County, describing it. Soon after the board made an allowance of $1,000 to Dr. Green for his extra work.

OHIO.—Cleveland, 390,000. Report for September: Total deaths, 432; death rate, 13.29; deaths under five years, 176; from cerebro-spinal meningitis, 2; typhoid fever, 7; croup and diphtheria, 17; diarrhœal diseases, 41; acute respiratory diseases, 25; consumption, 8; cancer, 19.

Ohio Society for the Prevention of Tuberculosis.

Columbus, Nov. 5.—The State Board of Health has about completed arrangements for the organization of what will be known as the Ohio Society for the Prevention of Tuberculosis. About one hundred and fifty of the leading physicians and scientists of the State have been invited—and have accepted—to join in this movement.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for four weeks ending October 26: Total deaths, 1,555; deaths under five years, 395; from typhoid fever, 34; malarial fever, 1; scarlet fever, 6; small-pox, 28; measles, 1; whooping cough, 12; croup and diphtheria, 49; diarrhœal diseases, 90; acute respiratory diseases, 144; consumption, 185; cancer, 59.

Pittsburgh, 332,000. Report for four weeks ending October 26:

Total deaths, 442; death rate, 17.3; deaths under five years, 141; from typhoid fever, 33; scarlet fever, 18; measles, 1; whooping cough, 3; croup and diphtheria, 16; diarrhœal diseases, 34; acute respiratory diseases, 52; consumption, 31; cancer, 14.

Typhoid fever is reported to be exceedingly prevalent in Johnstown and several other places. At Portage, so prevalent that the schools have been closed on account of it. At the little town of Adamsburg, Westmoreland County, an old well is in evidence. It was dug some 50 years ago, and so deep that the oldest inhabitant does not remember how far down the well-digger went. For years the water has enjoyed the reputation of being the purest and sweetest in Westmoreland County, and for that reason everybody in the mining town eschewed common water and went to the old town pump for their supply.

Recently a family residing near the town well developed a case of typhoid fever. The infection was carried by drainage to the town well, and in a few days more cases developed. And, shortly, more than 30 of the 100 inhabitants of the mining section of the village were infected. The physicians of the vicinity traced the infection to the well immediately, and placed an embargo on the use of the well water; but a large number of the townspeople refuse to discontinue the use of the water, and even worse results are feared.

TENNESSEE.—The State Board of Health, which met recently at Nashville, heard Secretary Albright's report, which showed there had been in the State, between April 1st and September 12th, 2,059 cases of smallpox and 94 deaths. Of these cases 861 were white. Shelby and Davidson counties, the report says, are, for the first time in years, free from smallpox. Scarlet fever of a very mild type exists in a number of counties. A resolution was adopted pertaining to tuberculosis, anthrax and glanders, which are said to exist in several sections of the State among the lower animals. The resolution asserts that these diseases may be communicated to the human race, and gives notice that all persons are prohibited from selling milk or other dairy products intended for human food from cattle infected with these diseases.

A new departure has been started by the Memphis Board of Health since October 1st, which promises excellent results in promoting sanitation throughout the city, and especially in rental houses. Its most commendable feature is that it will well-nigh compel landlords to keep their property in healthful condition.

The intent of the innovation is to secure a sanitary condition of premises, before the tenant enters upon his rental contract. To this end the board of health will now inspect any house and yard at the request of a purposed tenant, and give him a certificate, stating fully the condition of the plumbing and every other essential relative to perfect sanitation. In plain words, the Memphis lessee is now in a position to protect himself against taking up a residence in a house which has been recently tainted with smallpox, typhoid fever, scarlet fever, diphtheria or any other contagious or infectious disease, for the board of health will only give a clear certificate where the premises are found to be in perfect sanitary condition, so far as all causes of sickness are concerned.

At a recent meeting of the "Economic League," Dr. Heber Jones, president of the Board of Health, said, in part: The conditions in Memphis for twenty years had been as unfavorable as those of any other place on earth with the possible exception of New Orleans. From this condition of affairs Memphis had grown to be one of the leading cities in the country, and in point of good health, and a change had been effected of remarkable extent and import. Reviewing the sewerage system that has been and is being put into effect by the present administration, he showed that the system had been gradually increased until nearly all of the residence portion of the city had been placed in connection with it. By constant flushing the sewers had been kept clean, and sewer gas prevented, and that the death rate per thousand had decreased from year to year. It was but fair, he said, to suppose that this had been the result of public sanitary measures. Diphtheria, typhoid fever, scarlet fever and other diseases had become scarce in comparison with former years and other cities.

Another question that had presented itself was the matter of getting rid of the garbage of the city. It had formerly been hauled to the river and dumped by dump boats, which means of disposing of the refuse had caused complaint, and had been attended with unhealthful results. Four crematories had been put in, and the garbage was now burned. This system had resulted not only in an improvement from a sanitary standpoint, but had saved the city money. Where it had formerly cost the city $2 per ton to dump garbage, it now cost $1.65 per ton to burn it.

Taking up the death rate of the city per thousand before and after the sanitary improvements, he showed that from 22.17 it had decreased to 19.4 for the first six months of this year, and that the

second six months would show a material decrease over the first half year.

TEXAS.—New State Health Officer: Dr. GEO. R. TABOR, of Bryan, has been appointed State Health Officer *vice* Dr. W. F. Blunt, resigned. A most excellent appointment, the "Texas Medical Journal" says, upon which the Governor and the State are to be congratulated.

Dr. Tabor is a strong, healthy young man, not yet forty. He is a representative of the better class of the younger physicians, and is very popular. His appointment, I am sure, will have the endorsement of the profession at large, and he will have the confidence and support of his colleagues throughout the State. He has been County Health Officer of Brazos County many years, and has taken an active part in the agitation for sanitary progress and reform in Texas. He is a graduate of the Louisville Medical College, class of 1888. Dr. Tabor removed his family to Austin and took charge of the office November 1st.

UTAH.—Salt Lake City, 70,000. Board of health reports for September and October; Total number of deaths for the two months respectively, 58 and 61; death rate, 14.03 and 11.77; deaths from zymotic diseases, 12 and 11; deaths under five years of age, 18 and 11.

VIRGINIA.—The State Board of Health has addressed a letter to all superintendents of public schools in Virginia, in which it says:

"The State Board, with all the earnestness it can command, would urge an inspection of the schools to see that the children of the State have the protection that vaccination affords. It is not necessary to revaccinate those who have been vaccinated within the last three years, provided they have a good vaccination scar.

"Many children appear for enrollment who have never been vaccinated. These should be required to have this protection before they are received in any school, whether public or private. It is hoped that this regulation will soon be engrafted among the health laws of the State. It is generally observed in the cities, but not in the country. If accurate statistics were compiled, it would be found that not 10 per cent. of the children in the country have been vaccinated. It is hoped that the school officials will give this their prompt attention."

WASHINGTON.—Seattle, 100,000. Report for September: Total deaths, 77; death rate, 9.24; deaths under five years, 27; from typhoid fever, 1; scarlet fever, 1; diphtheria, 1; diarrhœal diseases, 8; acute respiratory diseases, 3; consumption, 10; cancer, 2.

WISCONSIN.—Milwaukee, 295,000. Report for September: Total deaths, 316; death rate, 13.06; deaths under five years, 148; from typhoid fever, 5; scarlet fever, 1; whooping cough, 1; croup and diphtheria, 7; diarrhœal diseases, 60; acute respiratory diseases, 24; consumption, 20; cancer, 21.

PHILIPPINE ISLANDS, and City of Manila, 250,000. Report for five weeks ending August 31st: Total deaths, 886; death rate, 36.98; deaths under five years, 543; from typhoid fever, 6; malarial diseases, 13; measles, 3; dysentery, 20; plague, 14; leprosy, 3; beri-beri, 24; diarrhœal diseases, 110; acute respiratory diseases, 92; consumption, 84; cancer, 2.

CUBA.—Havana, 255,555. Chief Sanitary Officer Major reports for the month of September, 1901, 339 deaths—the least number occurring in any previous September since 1889, and 157 less than for the same month in 1899; the greatest number, 2,397, in 1898; average for the month, 877.45; death rate, 15.64.

With regard to yellow fever deaths in September during the past eleven years, the least number occurred in the year 1899, when there were 18; the greatest number, in 1896, when there were 166—average, 70 deaths. This year we have had 2 deaths.

The small number of deaths during the month has been quite a gratifying surprise, and is difficult to account for at first glance; but when one comes to look into the statistics, the reasons are evident. This year, since the first of March, we have had 100 men daily engaged in killing mosquitoes in every way we knew how. The result is, that, instead of having 52 deaths from yellow fever and 32 from malarial fever, we have had 2 deaths from yellow fever and 11 from malarial fever—a difference of 71 deaths, under these two heads, in favor of this year. Again: last year, during September, there were 72 deaths from tuberculosis; this year, 58. This, it is thought, is in great part due to the special efforts made in this direction—the system in vogue in New York having been put into effect here. A record is kept of all tuberculosis in the city, and disinfectants, and literature on the subject of tuberculosis, are freely supplied to those suffering from this disease, through their physicians.

The streets have been kept in excellent condition by the Engi-

neer Department. I know of no city where they are cleaner, nor where the garbage is better collected. It is exceedingly rare in Havana to see an unemptied garbage can on the street after daylight.

Of other infectious diseases we have scarcely any cases. No smallpox has occurred for over a year. There were seven deaths from typhoid fever and three from diphtheria during the month. No scarlet fever exists in the city.

PORTO RICO.—Commissioner William H. Elliott's report of his needs of Porto Rico says that, although the superior Board of Health has been greatly hampered in its work by conflicting laws and orders, by lack of funds and more by the gross ignorance of the simplest rules of health which it has encountered among the people, strong prejudice against any change from customs and habits of long standing, and lack of efficient medical assistance; nevertheless, the sanitary condition of the island has been comparatively good. Threatened epidemics have been promptly checked. All possible efforts have been made, with fair success, to improve sanitation and to bring the people to proper appreciation of the value of cleanliness. Water supplies are being investigated as to their purity, and laws and regulations concerning food stuffs are being rigidly enforced.

CITY OF MEXICO, 368,777. Bulletin for August: Total deaths, 1,567; death rate, 4.24; annual, 50.88; prevailing causes of death: Typhus fever, 95; tuberculosis, 189; acute diseases of the lungs, 164; diarrhœal diseases, 453—233 infantile; heart diseases, 45; cirrhosis of the liver, 68; meningitis, 42; from other causes, 1 to 29, 511.

BUENOS AYRES, 835,878. Report for August: Total deaths, 1,571; deaths under five years, 563; from typhoid fever, 6; smallpox, 141; measles, 9; scarlet fever, 25; whooping cough, 1; croup and diphtheria, 22; influenza, 6; diarrhœal diseases, 83; acute respiratory diseases, 302; consumption, 176; cancer, 59.

Smallpox in the United States, as reported to the Surgeon-General U. S. M. Hospital Service, from June 28 to November 1, 1901. Condensed abstract: Alabama, 28 cases, 1 death; California, 36 cases, 1 death; Colorado, 494 cases; District of Columbia, 12 cases; Georgia, 37 cases; Illinois, 111 cases; Indiana, 213 cases; Iowa,

33 cases; Kansas, 462 cases; Kentucky, 4 cases; Louisiana, 16 cases, 2 deaths; Maine, 2 cases; Massachusetts, 108 cases, 12 deaths; Michigan, 99 cases; Minnesota, 1,857 cases, 13 deaths; Missouri, 135 cases, 2 deaths; Nebraska, 62 cases; New Hampshire, 13 cases; New Jersey, 102 cases, 21 deaths; New York, 562 cases, 148 deaths; North Carolina, 475 cases, 1 death; North Dakota, 56 cases; Ohio, 3,461 cases, 42 deaths; Oregon, 8 cases; Pennsylvania, 1,463 cases, 49 deaths; Rhode Island, 5 cases; Tennessee, 2,155 cases, 94 deaths; Texas, 566 cases, 4 deaths; Utah, 41 cases; Vermont, 28 cases; Virginia, 1 case; Washington, 40 cases, 3 deaths; West Virginia, 12 cases; Wisconsin, 1,152 cases, 24 deaths. Grand total, 13,226 cases, 431 deaths. Grand total for the same period last year, 4,533 cases, 95 deaths.

Vaccination is Ordered.—In consequence of outbreaks of smallpox multiplying both in Quebec and elsewhere, the executive of the Provincial Board of Health has ordered municipal councils of the Province to avail themselves, within three days, of the powers conferred upon municipalities by articles 90 and 100 of the Quebec Public Health Act, 1901, and by article 608 of the Municipal Code, and to enact, by municipal by-law, that the heads of industrial establishments shall require within forty-eight hours a certificate of successful vaccination within seven years from all persons employed in their establishments; or furnish to the medical officer of health of the municipality other proof of vaccination, which said officer will find sufficient; and if such certificate or other proof of vaccination is not forthcoming within the delay prescribed, to refuse the employee admission to the factory until it be produced.

The executive officer of the municipal sanitary authority is to give to directors of all educational establishments, school commissioners, and heads of schools, notice that all their pupils must, within forty-eight hours, furnish the same proof of successful vaccination as stipulated above.

Plague in the United States, San Francisco only, June 28 to November 1st: 13 cases, 10 deaths.

Plague Abroad: Continues in Brazil, 3 deaths in Rio de Janeiro during the week ending September 8th; officially classed "lymphatitis." China, in Hongkong, 1,740 cases, 1,639 deaths, this year to September 16th; during the week ending September 14th, 11 cases, all fatal. The recent outbreaks in Glasgow and Liverpool appear to have been promptly stamped out.

RECENT SANITARY PATENTS.

Fumigating Apparatus; Gilbert E. Alflin, Mount Olive, N. C.

Life Raft; John V. Janin, Seattle, Wash.

Substitute for Mother's Milk, Process of Making; John Meyenberg, Kent, Wash.

Purifying Water; Cleophas Monjean, Middletown, O.

Purifying Water; Adolph Sarge, Jr., Chicago, Ill.

Air, Regenerating and Purifying of; Alexander Desgraz and Victor Balthazard, Paris, France.

Ventilating Skylight; John F. Prenthurn, Philadelphia, Pa.

Ventilator; Peter Abrahamson, San Francisco, Cal.

Bath Cabinet; Warren A. Durrin, Woodville, Wis.

Detergent Composition (soap combination); Arthur Y. Hubbell, New Dorp, N. Y.

Filter; Albert L. Baron, Brooklyn, N. Y.

Filter; Henry A. Walker, Denver, Col.

Garbage Receptacle; William T. Cameron, Philadelphia.

Massage Roller and Exerciser; Geo. W. Milkman, New York.

Water Filter, Domestic; Robert T. Weaver, New York.

Water Purifying Apparatus; J. Dellatre, Dorignies-Fleurs, France.

Water, Pure and Palatable, Apparatus for Rendering; J. S. Wrightnour, John S. Wrightnour, Oil City, Pa.

Disinfecting Apparatus; M. Sheridan, New York.

Filter for Purifying Water; Auguste F. Avezard, Jr., Paris, France.

Filter; Robert T. Weaver, New York.

Germicides; Apparatus for Automatically Applying; John B. Pendleton, Strawn, Texas.

Sewers or Drains, Automatic Flusher for; P. J. Healey, Hyde Park, Mass.

Exercising Machine; Robert Reade, Philadelphia, Pa.

Exercising Machine; Alexander A. Whitely, Chicago, Ill.

Formaldehyde Fumigator; L. Feval, New Brunswick, N. J.

Purifying Machine (for milk); Olaf Oleson, Newark, N. J.

Water Closet Flushing Apparatus; Geo. H. Miller, Bloomington, Ill.

Means for Preserving Seals in Traps of Water Closets, Urinals, Wash Basins, Sinks, etc.; Mary A. Hyde, New York.

Filtration and Water Purifying System; Miles L. Davis, Lancaster, Pa.

Ventilator; Thos. A. Dungan, Chicago, Ill.

Water, Apparatus for Softening and Purifying; Chas. H. Koyl, New York.

Sewage; Apparatus for Treating and Utilizing; Robert J. G. Wood, Leonia, N. J.

Ventilator and Dust-Arrester; Benjamin F. Clarke, San Francisco, Cal.

Water Closets, Apparatus for Flushing; Jules C. Croppè, Paris, France.

Water Closets, Sewer Pipes, etc.; Apparatus for Clearing Obstructions from; F. Senff, Brooklyn, N. Y.

Water or Sewage Purification Apparatus; W. G. Toplis, Philadelphia, Pa.

Smoke Prevention Devices; William J. Creelman, Rochester, N. Y.

Smoke-Preventer, Automatic; Phineas F. King, Cleveland, O.

Water Closet; R. C. Johnson and J. B. Martin, Brooklyn, N. Y.

Water Closet Cistern; Paul Schung, Berlin, Germany.

Water Closet Tank; W. S. Cooper, Philadelphia, Pa.

Water Closet Valve; J. Denton, Paterson, N. J.

Water Closet Valve; D. T. Kenney, North Plainfield, N. J.

Water Seal Trap; Thomas P. Payne, Spokane, Wash.

Milk or Cream, Process for Preserving; Algernon V. Russell, San Francisco, Cal.

Water Supply System; John F. Barker, Springfield, Mass.

Car Ventilation; William T. Cottier, Portland, Oreg.

Car, Sleeping; Charles W. Beall, New York.

Dust Excluder; John P. Martin, Eli, Nev.

Flush Tank; Frank Rhind, Bridgeport, Conn.

Cuspidor, Flushing; Harry G. Grubbs, Allegheny, Pa.

Pasteurizing Liquids in Bottles, Apparatus for; Louis Gangloff, Hagenau, Germany.

Window Ventilator, Adjustable; David E. Worts, Grant's Pass, Oregon.

Ventilating Window; Joseph F. Chmelin, St. Louis, Mo.

Pocket Filter; Thomas Wright, Allegheny, Pa.

Antiseptic Pocket Cuspidor; John S. Lamond, Paterson, N. J.

Disinfecting Appliance; Thomas N. Thompson, Scranton, Pa.

BOOK REVIEWS.

OUR HEREDITY FROM GOD: CONSISTING OF LECTURES ON EVOLUTION. By E. P. POWELL. Fifth edition. 12mo. Pp. x+443. New York: D. Appleton & Co.

A particularly forceful book on evolution from the beginning, with a description of "life stuff" without form, yet endowed with formative substance, ab initio, for every living thing.

The subject is presented in three parts: A summary of the leading arguments in favor of evolution, as accounting for structural variety; the commonality of life between all creatures, and how definitely the links in a consecutive development of life have been established; and the process of evolution after man is reached—an effort to show that there is not only one evolution of life, including man and animals, interlinked in origin and in their progressive changes, but that human history, its religions, morals, arts, culminating in universal ethical laws, is also a subject of evolution. These several parts are subdivided into comprehensive but concentrated lectures or essays on the contributive conditions in detail.

While the author holds, prefatorily, that, "No religion but that of evolution can end anywhere but where it begins, in a chaos of creative purposes thwarted and disrupted, and in an eternal struggle to amend a shattered Divine plan," nevertheless, in the lecture "Wanted, Adam," "Evolution does not deny that in us is the revelation of Infinite purpose; nor does it cut us off from hope beyond that of our animal inheritance. It reveals only our immediate origin; but there is in us an hereditary undeniable of a sort not wholly animal. If man has come up from the cave, where he prowled with the hyena and the bear, and if he has left an ancestry of arboreal antecedents, until his brow reflects the dawn of eternity, may he not wisely believe that before him is his real destiny?" But the author's showing of the "co-operation (?) between the two kingdoms of life," animal and vegetable, to this end is, it strikes us, wholly inconsistent with the instance of antagonism which he cites (p. 200), of man's contention with disease germs.

"The animal devours the vegetable, apparently as the superior; yet the air is filled with vegetable spores waiting a chance to settle upon and devour the animal. Terribly triumphant is the vegetable when, as typhoid, or as scarlet fever, or as black death, it sits upon the pestilence and depopulates, as it terrifies, cities and States."

It comprehends the relations of plants to animals generally, and to man in particular; the instincts and educational faculties of animals and their inter-relations in all their phases, and the relations of all, socially and physiologically, to man universally.

THE COST OF GOODS: A STUDY IN DIETARIES. By ELLEN H. RICHARDS, Instructor in Sanitary Chemistry, Massachusetts Institute of Technology. 12mo., pp. 161. Price, $1. New York: John Wiley & Sons.

The gist of many treatises on food requirements and values for the different ages and conditions, from infancy to adult life, individually and collectively, for the nursery, school-life, brain-workers and laborers, hospitals, penal and pauper institutions; the general principles governing dietaries, groups and costs per person per day in the various conditions and circumstances. A book of extensive and practical utility insufficiently suggested by the title.

HANDBOOK ON SANITATION: A MANUAL OF THEORETICAL AND PRACTICAL SANITATION. For Students and Physicians; for Health, Sanitary, Tenement-house, Plumbing, Factory, Food, and other Inspectors; as Well as for Candidates for All Municipal Sanitary Positions. By GEORGE M. PRICE, M.D., Medical Sanitary Inspector, Department of Health, New York City; Inspector New York Sanitary Aid Society of the Tenth Ward, 1885; Manager Model Tenement-houses of the New York Tenement-house Building Company, 1888; Inspector New York State Tenement-house Commission, 1895. 12mo. Pp. xii+317; 31 figures. Cloth, $1.50, net. Order through your bookseller, or copies will be forwarded, postpaid, by the publishers on receipt of the retail price. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1901.

A concise manual of sanitary knowledge adapted to sanitary inspectors' use, particularly from New York's field of view. It is appropriately and excellently illustrated with cuts and diagrams of the most recent devices and improvements in ventilation, house drainage, plumbing apparatus and tenement-house construction. Gives the methods of application of sanitary knowledge in municipal departments throughout the country with extracts from the laws, rules and regulations of New York and other municipalities. Hence it is well adapted to and commendable for sanitary practice generally.

THE CROWN OF THORNS: A STORY OF THE TIME OF CHRIST. By PAUL CARUS. Illustrated. Chicago: The Open Court Publishing Co.

The story purports to present the historical and ethical conditions of the origins of Christianity. It is fiction of the character of legend, utilizing materials preserved in both the canonical Scriptures and the Apochryphal traditions, but giving preference to the former. The religious milieu appears to be strictly historical, and is designed to show the way in which Christianity developed from Judaism through the Messianic hopes of the Nazarenes, as interpreted by the Apostle Paul of Tarsus. The book is elegantly illustrated by Mr. Eduard Biedermann. Pp. 73. Price, 75 cents, net.

REPORT OF THE COMMISSIONER OF EDUCATION FOR THE YEAR 1899-1900. Vol. I. Pp. lxxx+1,280. Washington: Government Printing Office.

Total enrollment of schools and colleges for the year, 17,020,-710, an increase of 282,348 pupils over the previous year. Of this number 15,443,462 were in public institutions. The average length of the above term for the year was 144.6 days. The enrollment is classified and tabulated, showing the per cent. of the enrollment to population in the divisions of the United States: North Atlantic, 17.82; South Atlantic, 20.91; South Central, 21.46; North Central, 22.16; Western, 19.70. And next follows the percentage of the States severally—26.39 (Utah) to 13.42 (Arizona). Average number of days' schooling given for every child 5 to 18 years in the United States 68.3; in the North Atlantic Division, 41.9; South Central Division, 41.2; North Central Division, 82.2; Western Division, 80.5. In the States severally, 107 (Massachusetts) to 21.9 (North Carolina).

Comprehensive chapters follow on the development and progress of educational systems generally and specifically; educational extension in the United States and dependencies.

The chapters on alcohol, in its relation to the sphere of school-teachers: "Alcohol Physiology and Superintendence," by Prof. W. O. Atwater, of Wesleyan University, and "The Rôle of the School-Teacher in the Struggle Against Alcoholism," by A. Sluys, Director of the Brussels Normal School (a report of the Sixth International Congress Against the Abuse of Alcoholic Drinks, at Brussels, 1899), comprehend much useful information which all school authorities and teachers should have as a basis for practical deductions in the exercise of their duties, insomuch as to be worthy

of separate publication and dissemination as an offset to much false teaching now in vogue. These essays go to the root of the subject. They tell the truth about alcohol, and show how that truth may and ought to be taught without misrepresentation. The volume altogether is replete with knowledge of practical importance to all institutions of learning, school authorities and teachers.

"THE RIGHT OF WAY;" A NOVEL. By GILBERT PARKER, Author of "The Seats of the Mighty," "When Valmond Came to Pontiac," etc. Illustrated by A. I. Keller. Pp. 420. New York: Harper & Brothers.

A forceful drama, impersonated with a mixture of the extremes of good and evil propensities, individually in Charley Steele, the leading character, and collectively in the rest, so planned, unfolded and exhibited as to test human courage under the most trying circumstances; and this is its chief virtue. The trend of the book altogether is singularly inconsistent with the title. There are many ways opened up, alluring to the reader on account of the freshness and brilliancy with which they are presented at the outset, as was the brilliancy of "Beauty Steele" at the opening of his career as a lawyer; but—as was his way also at the last—disastrous and shocking—ways to be avoided. For the knowledge of these "The Right of Way" is deeply interesting and commendable.

THE PHYSICIAN'S VISITING LIST (Lindsay & Blakiston) FOR 1902. *Fifty-first year of its publication.* So well known and in such general use on account of its superior excellence as only to require announcement. It continues to maintain the long-since worked-out facile means for recording the daily work and the needful tables for ready reference, calendar, signs, weights and measures, doses, emergency methods, comparison of thermometers, period of utero-gestation, etc. It is issued in different styles, adapted to the record of 25, 50, 75 and 100 patients daily, with corresponding dates, and a perpetual edition without dates; also a monthly edition, in which name of patient need be written but once, the month's account being kept in one place, can be commenced at any time. Prices in the orders named for the numbers of patients, severally, $1, $1.25, $2, $2.25. Perpetual edition, for 1,300, $1.25; 2,600, $1.50. Monthly edition, $1. Leather cover, packet and pencil. P. Blakiston's Son & Co., Philadelphia.

CONTEMPORARY LITERATURE.

With its November number "The Century" begins a "Year of American Humor," by Prof. W. P. Trent, of Columbia University, with portraits of Lowell, Warner, Holmes, Harte, Hay, Artemus Ward, Mark Twain, Stockton, Harris, Bunner, Field, Bill Nye, Riley, F. P. Dunne, George Ade, and a score or so of others who have successfully sought to tickle the risibilities of the American people. The humor in this issue of the magazine includes "Two Little Tales," by that most famous of living fun-makers and satirists, Mark Twain; "Songs of the Cheerful People," by Paul Dunbar; "Mr. Appleby's Vote," by Catharine Glen; "The Indiscretion of John Henry," a story of a woman's club, by Walter Sawyer; "More Animals," in picture and verse, by Oliver Herford; another of "Patrolman Flynn's Adventures," by Elliott Flower; apothegms by Carolyn Wells, and three full-page pictures of Don Quixote, as he appears to André Castaigne, Howard Pyle and A. I. Keller, respectively.

Another important departure in this number of "The Century" is the beginning of a series of papers on the Great West, to be contributed by Emerson Hough, author of "The Story of the Cowboy," and Ray Stannard Baker, author of "Our New Prosperity." Mr. Hough will describe, with illustrations by Frederick Remington, the heroic settlement of the Ohio and Mississippi Valleys and their prodigious growth in wealth and population, taking the various sorts of transportation as a motif for his story. Mr. Baker will treat especially of the spreading of the settlers toward the Rocky Mountains and beyond. Mr. Hough's opening paper, "The Settlement of the West," is philosophic in grasp and picturesque in detail, and is accompanied by typical figure drawings, portraits and maps.

AMERICAN OPPORTUNITIES AND EDUCATION.

Hamilton W. Mabie contributes to the November number of the "North American Review" a masterly article, entitled "American Opportunities and Education," in which he discusses the essential meaning of the situation in which our country finds itself at the present moment, viewed in its relation to the historical development of the nation. Starting with the principle that, sooner or later, every experience must disclose its value in vital education, Mr.

Mabie outlines the course of education by experience through which the race has passed from savage individuality into the social life of civilization. First there was the dame school, the isolated family of the savage age; then the primary school of clan association; then the secondary school, the interests and relations of men in the nation; and now we are entering upon the university period in the education of man, when the highest unit in society ceases to be the nation and becomes the race. Those are short-sighted, Mr. Mabie contends, who would keep the United States from participation in the benefits of this higher stage of education and experience. He says:

"The spirit which would take America out of this competition, keep her out of the world-field, has its rise either in ignorance or in fear. A great many Americans are still smitten with that kind of provincialism which finds safety in holding aloof from one's own neighbors and prosperity in attending exclusively to one's own business; but the business of the world is our business; family ties between races are coming more and more to light. It is impossible to keep any section of a city in health if in one neglected quarter disease is bred and started on its fatal course; it is impossible to keep the modern world wholesome if the conditions attending the pilgrimages to Mecca still breed cholera at recurrent periods, or if sanitary conditions in Bombay and Calcutta revive the black death, the scourge of the Middle Ages. We shall keep our freedom not by hoarding it, but by using it; we shall preserve the integrity of our own national ideals, not by trying to build walls around them on this continent, but by holding them boldly before the whole world."

FOOTBALL.

"Ye Merry Game of Football from Ancient Times Till Now," is the title of an illustrated article in the November "St. Nicholas" from the pen of N. O. Messenger. The Greeks invented the sport, and through the Romans it reached the Britons. In the time of Queen Elizabeth football was in high favor. It was played in the city streets, on the commons, and in country lanes. There was not much rule or order to the game, the object being merely to put the ball into the enemy's goal, by fair means or by foul. The goals might be a mile apart, with ditches and hedges and highroads between. The players struggled in earnest, and broken bones were no rarity in the rush that followed.

This was probably the roughest and most brutal period in foot-

ball's history. The accounts of the times speak frequently of accidents, and too often there were fatal incidents in the playing of the game. * * *

With the year 1800 the game began to be adopted by English schools and universities as the leading sport. In 1863 an association was formed and it was made a scientific sport. At this time the game was played differently by different universities. Rugby permitted carrying the ball, holding runners, charging and tackling. while Harrow and Winchester only allowed kicking. In 1871 the Rugby Union was formed, and rules were laid down. Prior to 1875. American universities had paid little attention to football. It was Harvard that brought the game to the United States, and in order to have a foeman worthy of its steel, taught it to Yale. "Old Eli" took gracefully to the drubbing that was involved in learning the first lesson, which was learned so well that for many years thereafter Harvard had no more victories.

In the November number of the "North American Review," President Charles F. Thwing, of the Western Reserve University, discusses "The Ethical Functions of Football." President Thwing argues that football serves a very important function in the moral training of young men who are passing through a college curriculum, for a number of reasons. It represents the inexorable, embracing things that must be done at specific times and places and in specific ways. It is an aggressive game, and illustrates the value of the positive and of a compelling interest. It further embodies the process of self-discovery, being the occasion of revealing to the player his possession of power, or the lack of it. And it develops self-restraint and subordination of the individual will to the larger purposes of team-work. Says President Thwing:

"In the building of character, the negative has some, but slight, value. It represents the more elementary conditions of the ethical process. The Old Testament says 'thou shalt not,' and this is well; the New Testament says 'thou shalt,' and this is better. It is well to adopt as one's ethical rule that whatever is not expressly allowed is denied; it is better to adopt as one's ethical rule that whatever is not expressly denied is allowed. Life is to be interpreted as sound, wholesome, righteous, unless there be evidence to the contrary, and never as corrupting, base, wrong, unless there be evidence to the contrary. Such an interpretation creates the highest qualities of health and healthfulness. Be it said football embodies and enforces such an interpretation. It emphasizes the aggressive, the forth-

putting, the direct, the positive. It teems with the glorious sense of certainty. It embodies Carlyle's 'eternal yea.' It illustrates the science and art of realism. It embodies actuality. It stands for the perpendicular. It teaches one to do. Its commands are condensed into the command 'forward.' It bucks, it pushes, it breaks, it runs, it goes; it goes through the line, it goes round the ends, but it goes."

"LIBERTY AND HAPPINESS."

The words "Liberty and Happiness" were always being joined in speeches and writings of the founders of our republic. The phrase represented the ideal toward which the world, by its most liberal and sympathetic leaders, earnestly and hopefully strove. "Liberty and Happiness" were supposed to have been established by the written constitutions of the United States and certain other countries, and by the unwritten constitutions of others; and indeed there has been a genuine advance, we believe, in human liberty and in human happiness. But this country is finding out, through painful experiences, that our "free government" does not make certain all forms of happiness; it does not insure our system from deadly attack in the person of its rulers; it does not make our whole Senate pure; it does not, in itself, save all our State and municipal governments from corruption. When a people has obtained its freedom, it may be only beginning to learn the lesson of self-government. There are ill-regulated minds, even in a republic like ours, that interpret freedom as license, and would make free speech the handmaid to free murder.—"The Century" for November.

HOW TO MAKE FRIENDS OF THE FILIPINOS.

It is impossible to live among the Filipinos without admiring their many good and wholesome qualities. Nearly all of their weaknesses of character and disposition are due to causes for which they should not be held accountable. What is bad or vicious in them is not in the blood, but in the influence of example and custom. If we will remove from their daily lives the presence of an immoral government and of venal and licentious officials, and from their surroundings the squalor incident to a corrupt and grasping tax-system, then we will advance them far on the road to prosperity and civilization; we will rouse in them a desire for comfort, cleanliness and homely luxuries, eradicate those qualities of sloth and deceit which, after all, are but skin deep, and bring into pleasing prominence their natural tractableness, good nature, love of family,

and virtuous living. Their religious fervor needs no cure, except at the head; and this is the one good inheritance—could we forget the wrongs done by individuals—which the departed power of Spain has left behind.

The part taken by our army in the civil settlement of the Philippine Islands is a page in history that may never written, but will be remembered by the Filipinos with gratitude and respect. It was from that army that they gained the true definition of official honor, and with unaccustomed eyes they saw its members using every power of mind and body in the development of good government and fair dealing, with no incentive beyond right principle and no reward but clear conscience. They looked, as was natural to men of their training, for motives, either sinister or selfish; for it was not conceivable that health and home, and even life, would be risked or thrown away for the mere contemplation of duty done and honor satisfied. But it has come to pass, and their eyes are opened and they believe.—From "The Viewpoint of the Filipinos," by H. L. Hawthorne, in the "American Monthly Review of Reviews" for November.

THE JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES. This number has the proceedings of the association at its tenth annual meeting at St. Paul, May 20th to June 1st. Pp. 220, Vol. IV., No. 1. Price, $5 a year.

It is a quarterly, alternately to be a monthly, edited by James Evelyn Pilcher, of Carlisle, Pa., to whom communications should be addressed. Its object is to encourage the development of military medicine, surgery and sanitation. There are the usual lists, reports, proceedings and addresses of such an association. The stimulus of the Spanish-American war is apparent throughout. The next meeting will be at Washington, June 5-7, 1902. The canteen question, by Major Seaman and others, is discussed at length in this issue. We will be pleased to exchange, as per request.

Pamphlets, Reprints, Reports, etc., Received.

Impressions of the London Tuberculosis Congress and the Black Forest Sanatoria for Consumptives. Charles Denison, M. D., Denver, Col.

A Rectal Résumé. E. F. Hoyt, M. D., New York.

Food and Drink. Speech of Hon. Wm. E. Mason, of Illinois, Senate of United States.

INDEX.

Abstainers, Total, Special Insurance for, 65.
Accidents, Locomotive, of a Month, in Paris, 374.
Alcohol, The Real Effect of, Prof. Schmiedeberg, 509.
American Opportunities and Education, Malie, 563.
Animal Diseases, Relation of, to Public Health, Grout, 310.
Anodyne, An Ideal, D. S. Madox, 518.
Antitoxin, Preparation of, in St. Louis, 546.
Antikamnia and Heroin Tablets, 340.
Antiquity of the Temperance Reforms, 512.
Appetite, The Functions of, J. P. Pawlow, 492.
Ashmead, A. S., Propagation of Leprosy, 506.
Associations, Conventions, Etc.:
American Climatological Association, 250; American Congress of Tuberculosis, 59; American Medical Editors' Association, 152; American Public Health Association, 282, 437; British Medical Congress of Tuberculosis, 84; Exposition of Hygiene, Maritime Security and Fishery at Ostend, 190; Mississippi Valley Medical Association, 192; Conference of Health Officers of the State of New York, 540.
Athleticism and Longevity, 151.
Avoidance of Stimulants, Prof. Senator, 495.

Bacteriology, Report on, 444.
Bailey, C. I., Typhoid Fever Results from Filtered Water Compared with Previously Unfiltered, 410.
Balloon, a, Across the Atlantic in, 478.
Bashore, H. B., Some Phases of River Pollution, 193.
Bashore, H. B., Hygiene of the Trolley, 504.
Bathrooms in Boston Schools, 362.
Baths, Public, More Free, 347.
Bell, A. N., Fomites and Yellow Fever, 302.
Biggs, H. M., How Three Thousand Lives May be Saved Yearly in New York, 161.
Black Death, The, 349.
"Bland Diet," Prof. Senator, 494.
Blindness, Prophylaxis of, Pinard, 452.
Bolton, Ex-mayor, Circulatory System of Sewerage, 195.
Book Reviews:
A Slaveholder's Daughter (Kearney), 378; Anatomy, Physiology and Hygiene of Infancy and Childhood (Cotton), 283; Century Magazine, 92, 563; Delineator, The, 96, 383; Etidorhpa (Lloyd), 183; Gallery of Pictures of Interest to Medical Men, 477; Handbook of Sanitation (Price), 460; How to Cook for the Sick and Convalescent (Sachse), 182; Kindergarten, a, What is (Hansen), 90; Libertinism and Marriage (Jullien), 377; Living Age, 382; Medical Direc-

tory of New York, New Jersey and Connecticut, 475; Municipal Sanitation in the United States (Chapin), 86; North American Review, 93; Our Heredity from God (Powell), 559; Prescriptions of Distinguished Physicians (Palmer), 87; Principles of Human Knowledge, 89; Progressive Medicine, 87, 476; Public Health Record, 91; Rabies (Salmon), 90; Religious Science Library (Berkeley), 183; Report of Commissioner of Education, 561; Review of Reviews, 91, 378; School Hygiene (Shaw), 182; Smithsonian Institution, 89; St. Nicholas, 94; Substitutes for the Saloon (Calkins), 475; The Cost of Foods: A Study of Dietaries (Richards), 560; The Crown of Thorns (Carus), 561; The Right of Way (Parker), 563; The Physician's Visiting Lists, 563; Treatise on the Acute, Infectious Exanthemata (Corlett), 377; University of the State of New York, 283; Water and Water Supplies (Thresh), 86; Weather Bureau Report, 88; Yearbook of the United States Department of Agriculture, 90. Pamphlets, Reprints, Reports, Etc., Received, 567.
Books, Owning, 288.
Books, Your, Keeping Track of, 189.
Bottle, She Used the Wrong, 453.
Brain Work, Fallacies About, William Matthews, 496.
Bronchitis, Infantile, Artificial Respiration in the Treatment of, Heermann, 449.
Brouardel, Prof., Measures Adopted by Different Nations for the Prevention of Consumption, 213.
Bubonic Plague Abroad, 180.
Bubonic Plague Stamped Out, 372.
Butter, Fishy, in Australia, 272.

Canned Goods, Fraudulent, in Mexico, 272.
Canteen, Army, The, Medical Men and, 139.
Canteen, the Army, Some Results of, from the Standpoint of Discipline and Hygiene, 438.
Canteen, the, More About, and the Vote of the American Medical Association, 262.
Carnegie's Gift to the City of New York Assured, 354.
Chancellor, C. W., Social Evils Resulting from Unsanitary Dwellings, 328.
Chapin, Henry Dwight, New York Milk Supply, 481.
Chicago Canal, the, More About, 164.
Children, A Room for, 381.
Chinese, the, Poetry of, 93.
Cholera, Treatment of, Stuggha, 452.
Christian Converts in India, 287.
Christian Science and the Law, 57.
Christian Science, The Absurd Paradox of, 186.
Christian Science, The Phantom Fortress of, 379.
Christian Science, The Right Kind of, 150.
Cinematograph for the Blind, 270.

Climate of Long Island, Denslow, 415.
Clothing, Summer, 149.
Coffee, the Properties of, An Oldtime Physician on, 55.
Conn, H. W., The Method of Evolution and the New Theory of Heredity, 39.
Consumption, the Prevention of, Measures Adopted by Different Nations for, Brouardel, 213.
Consumptive Patient, Direct Infection of Nurse from, 340.
Consumptives, For the Care of, 144.
Consumptives, Hospitals for, The Need of, Koch, 208.
Consumptives, Sanatoria for, Koch, 210.
Consumptives, State Hospital for, Fisher, 428.
Consumptives, To Take Census of, 68.
Corbally, T. P., Medical Excerpt, 50, 337, 447, 515.
Couldn't Understand, 96.
Credé, Unguentum, Daxenberger, 450.
Cuban Fruits and Vegetables, 286.
Curious Cause of Death, 505.

Danger and Daring, Careers of, Daskam, 94.
Dead, the, Vital Statistics, and Regulations for Disposal of, 35.
Death, Curious Cause of, 505.
Denslow, LeG. N., Climate of Long Island, 415.
Determination, 243.
Diphtheritic Paralysis, Treatment of, Ballan, 447.
Diplomacy, Mr. Cleveland's, 184.
Diseases are Preventable, If Certain, Why are They not Prevented? Kober, 118.
Diseases, Infectious, Control of, Kober, 116.
Diseases, Infectious, Spread Through the Milk Supply, 148.
Diseases, Various, Special Preventive Measures Needed for, Koch, 198.
Drink Statistics, 514.
Drunkenness an Acquired Vice—not Hereditary, 42.
Dufton, A., Production of Artificial Light of the same Character as Daylight, 334.
Dust, Dangers of Inhalation of, 269.
Duty, 249.
Dwellings, Sanitary, for Wage Earners, Kober, 112.
Dwellings, Unsanitary, Social Evils Resulting from, Chancellor, 328.

Eagan, P. R., Meat Ration in the Tropics, 395.
Eagle, The, or the Hen, 383.
Eczema, Treatment of, 453.
Eggs Frozen Hard—Cold Storage, 529.
English Cities, Census of, 159.
Evolution of a Third Eye, 187.
Evolution, The Method of, and the New Theory of Heredity, Conn, 39.

Evolution, Vegetarianism and, 265.
Eye Sees in Reading, How the, 479.

Fallacies About Brain Work, William Matthews, 496.
Fame, Such is, 384.
Fasting, The Hygiene of, 352.
Filipinos, How to Make Friends of, Hawthorn, 566.
Filtration Near at Hand in Philadelphia, 367.
Fisher, W. E., State Hospital for Consumptives, 428.
Flannelette, The Danger of, 66.
Fomites and Yellow Fever, Bell, 302.
Food, Injurious, Prohibition of, in Massachusetts, 271.
Food, Powdering, to Keep it, 382.
Food, Pure, and Drug Legislation, Kober, 108.
Foods, The Functions and Uses of, Langworthy, 385.
Food and Drink Supply of Paris, Consular Report, 495.
Football, Messenger, Ethical Functions of, Thwing, 564.
Fractures of the Skull, Poirier, 337.

Gardner, W. M., Production of Artificial Light of the Same Character as Daylight, 334.
Gibbes, H., Tuberculosis—A Retrospect, 46.
Glands, Secretion of the, Gomez Ocana, 515.
Godliness and Uncleanliness, and Disease, 343.
Gout and Arthritism, Morel-Lavelle, 55.
Government of Cities, 477.
Grapes, Wild, Poisonous, 150.
Green, E. M., Medical Inspection of Schools, 498.
Grout, D. D., Relation of Animal Diseases to Public Health, 310.
Growing Old? No! O. W. Holmes, 519.
Guenther, R., Woandsu an Ideal Food, 21.
Guernsey, R. S., Utilitarian Principles of Taxation and their Relation to Altruism, 22, 134, 227, 289, 523; Water Taxation, and What Municipal Ownership Has Done and What It Should Do, 289.

Hackett, W. A., Lupus—A Tubercular Affection of the Skin, 225.
Havard, V., Sanitation and Yellow Fever in Havana, 13, 121.
Haywood, Julia, Hygiene of the Schools, 502.
Health Board, Our Bashful, 346.
Health, National Board of, Kober, 103.
Health, Public, Relation of Animal Diseases to, Grout, 310.
Health Studies, Cosmopolitan, Oswald, 29, 231.
Heart Failure, Kelsch, 338.
Heredity, the New Theory of, The Method of Evolution of, and, Conn, 39.
Horses, Army, Fatigue in, 455.
Horse Meat, Consumption of, in Frankfort, 518.
Hospital Camp, State, 368.
Hospital Practice, American, Seaman, 425.

Housekeeping, Public, 64.
Hundred Years, a, The Art of Living, Hoffman, 237.
Hunger and Mental Activity, 188.
Hydrogen Peroxide, the Prevention of the Bursting of Bottles Containing, Automatic Safety-valve Stopper for, 53.
Hygiene and Sanitary Science, The Progress and Tendency of, in the Nineteenth Century, Kober, 97.
Hygiene of the Trolley, H. B. Bashore, 504.
Hygiene, Industrial, Kober, 111.

Ichthyol, Leprosy and, 55.
Immigration, Tuberculosis a Bar to, 63.
India, Christian Converts in, 287.
Insanity, Prevention and Cure of, 411.
Insecticide, an, Lime, 350.
Insects as Disseminators of Diseases, Stiles, 3.
Intercranial Resection, San Martin, 449.
International Sanitary Regulations, 530.

Journal of the Association of Military Surgeons, The, 567.

Kober, G. M., The Progress and Tendency of Hygiene and Sanitary Science in the Nineteenth Century, 97.
Koch, R., The Fight Against Tuberculosis, 197.
Koch's Modified Statement, 340.

Lachapelle, E. P., Prophylaxis of Tuberculosis, 325.
Langworthy, C. H., The Functions and Uses of Foods, 385.
Lepers, Census of, in the United States, 158.
Lepers, To Nurse, 353.
Leprosy and Ichthyol, 55.
Leprosy, Propagation of, A. S. Ashmead, 506.
Leprosy and the Mosquito, 530.
Liberty and Happiness, 566.
Life, The Song of, 376.
Life-saving Apparatus, 536.
Light, Artificial, Production of, of the Same Character as Daylight, Dufton and Gardner, 334.
Lime an Insecticide, 350.
Lives, How Three Thousand May Be Saved in New York Yearly, Biggs, 161.
Locomotive Accidents of a Month in Paris, 374.
London's Greatest Danger, 92.
Longevity, Athleticism and, 151.
Long Island, Climate of, Denslow, 415.
Lunch Clubs, Women's, 380.
Lupus—A Tubercular Affection of the Skin, Hackett, 225.

McCormack, J. N., Preventive Medicine in Kentucky, 221.
McKinley, President, The Assassination of, 354.
Malaria, Far-fetched, 362.
Malaria in New York—Efforts for its Prevention, 357.
Marine Hospital Service Ignored, 459.

Martin, S., Typhoid Bacillus in the Soil, 129.
Mason, F. H., Improvement in Welsbach Gas Lights, 331.
Mather, E., Tuberculosis—Preventive Measures, 49.
Matthews, William, Fallacies About Brain Work, 496.
Medical Excerpt, Corbally, 50, 337, 447, 515.
Medical Fellowship Open to Americans, Liverpool, 535.
Medical Inspection of Schools, E. M. Green, 498.
Medical Research, A New Institution for, 57.
Medicine, Preventive, in Kentucky, McCormack, 221.
Medicines, Patent and Proprietary, Kober, 110.
Milk in Paris and Berlin, 527.
Milk Adulteration in Germany, 148.
Milk Supply, the, Infectious Diseases Spread Through, 148.
Milk Supply, H. D. Chapin and Others, Report of, 481.
Mortality and Morbidity Reports and Reviews, 67, 159, 273, 354, 461, 538.
Mortality Due to the Hurricane in Porto Rico, in 1899, 281.
Mortality Report—United States Census, 461.
Mortality Statistics Abroad, 175.
Mortality, the, Forecasts of the Century's Work Upon, Kober, 119
Mosquitoes, The War Upon, Doty, 268.

Nation, Ours a Sovereign, 185.
Nations, European, Census of, 158.
Nerve, the Pneumogastric, Section of, Ribera, 449.
New Orleans, Water Purification for, 166.
New York Milk Supply, H. D. Chapin, 481.

OBITUARY:
Thomas J. Turner, M. D., U. S. N., 355.
Albert L. Gihon, A. M., M. D., U. S. N., 538.
Officialism, Pusillanimous, 457.
Organizations, Voluntary, Effects of, Kober, 102.
Oswald, F. S., Cosmopolitan Health Studies, 29, 231.
Ozonized Air Required, 351.

Patents, Recent Sanitary, 557.
Pawlow, J. P., Functions of the Appetite, 492.
Peritonitis, Acute, Anodyne Treatment of, McCaffrey, 339.
PERSONAL:
Clark Bell, Esq., 58.
Pests and Unsanitary Conditions of the Middle Ages, Kober, 98.
Pets, Household, Danger in, 56.
Philadelphia, Filtration Near at Hand in, 367.
Philippine Islands, Report for Six Months, 83.
Phthisis, Collective Investigations of the Influence of Silver Nitrate Injections on, 342.
Physician, The, as a Pioneer in Civilization, 66.
Plague, Diagnosis of, Barker, 448.
Poetry of the Chinese, 93.
Population, Density of, 157.
Population of the Largest Cities in the World, 159.

Population of the United States and Incorporated Places, 153.
Porto Rico's Sanitary Condition, 81.
Prize, Eno-Sander, for 1901-1902, 537.
Prisons, Sanitation of, Kober, 113.
Proctor Theatres, the, News of, 384, 480.
Propagation of Leprosy, Ashmead, 506.
Prophylaxis, Sanitary and Moral, Society for, 353.

Quarantine and Life Insurance, 65.
Quarantine and Yellow Fever, 143.
Quarantine, National and International, Kober, 104.
Quarantine, New York, Inspection of, 144.
Quinic Acid and Gout, De la Camp, 339.

Rachiococainisation, Death from, Broca, 338.
Ration, Meat, in the Tropics, Eagan, 395.
Rheumatism, Myocardial, Merklen, 53.
Rheumatism, Tubercular, Poncet, 338.
Right-mindedness Exemplified, 478.
River Pollution and the Chicago Drainage Canal, 466.
River Pollution, Sewage Disposal and, Kober, 106.
River Pollution, Some Phases of, Bashore, 193.
Rubber, Substitute for, 196.

SANITARIAN, THE, to Date, 519.
Sanatoria for Consumptives, Koch, 210.
Sanatoria, State and Foreign, 144.
Sanatorium, A Chicago, 153.
Sanitary Patents, Recent, 557.
Sanitary Resorts, 147.
Sanitation and Yellow Fever in Havana, Havard, 13, 121.
Sanitation in the United States, Progress of, Kober, 101.
Sanitation, School, in Connecticut, 359.
Schmiedeberg, Prof., The Real Effect of Alcohol, 509.
School Hygiene, Kober, 114.
School Hygiene, 443.
School of Health Officers, The Vermont, 244.
School Room, Hygiene of, Julia Haywood, 502.
School Sanitation in Connecticut, 359.
Schools, Medical Inspection of, E. M. Green, 498.
Scrofula, Its Origin and Treatment, Hacks, 50.
Seaman, L. L., American Hospital Practice, 425.
Sea, the, Life in, 285.
Sewage Disposal and River Pollution, Kober, 106.
Sewerage, Circulatory System of, Bolton, 195.
Sewers and Public Water Supplies, Influence of, Kober, 105.
Simin, M., Water Purification with Ozone, 301.
Sin Will Pluck Out, 460.
Small-pox Among the Indians, 369.
Small-pox and Compulsory Vaccination, Kober, 115.
Small-pox and Deaths from Heat, 160.

Small-pox, No, Among the Indians at Black River Falls—Correction, 472.
Small-pox, Prevalence of, 80.
Small-pox Stamped Out, 363.
Snake, A Large, 96.
Soaps—Concerning their Manufacture and Qualities, 453.
State Hospital Camp, 368.
Statistics, Vital, and Regulations for the Disposal of the Dead, 35.
Stiles, C. W., Insects as Disseminators of Diseases, 3.
Stimulants, The Avoidance of—"Bland Diet," Prof. Senator, 494.
Stradling, G. F., Recent Advances in the Physics of Water, 400.
Substitution of Drugs, Legislative Act to Prevent, 456.
Substitutions in Medicines, 341.
Sugar Consumption, 533.
Summer Clothing, 149.
Summer Complaints, 147.
Sunlight, Similar to the Effect of, Hammond, 452.

Tabor, Geo. R., M. D., State Health Officer of Texas, 553.
Taxation of Water, and What Municipal Ownership Has Done and What It Should Do, Guernsey, 289.
Taxation, Utilitarian Principles of, and their Relations to Altruism, Guernsey, 22, 134, 227, 289, 523.
Temperance Reforms, The Antiquity of, 512.
Tents, To Live in, 63.
Tetanus and Antitoxin in St. Louis, 546.
Texas, Sanitary Requirements in, 76.
Texas, New State Health Officer of, 553.
Tobacco, 527.
Tolstoy, Count, and the Russians, 188.
Trephining Young Animals, Demoor, 516.
Trolley, The Hygiene of, H. B. Bashore, 584.
Tuberculosis, 439.
Tuberculosis a Bar to Immigration, 63.
Tuberculosis, Experimental, Lannelongue, Schard and Galliard, 516.
Tuberculosis and Nutrition, Monfet, 51.
Tuberculosis a Preventable Disease, Koch, 197.
Tuberculosis—A Retrospect, Gibbes, 46.
Tuberculosis as a Complication in a Medico-legal Suit, 146.
Tuberculosis, Bovine and Human, Difference Between, Koch, 202.
Tuberculosis, Bovine, Is Man Susceptible to? Koch, 205.
Tuberculosis, Bovine, Precautions Against the Danger of, to Man, Should not be Abandoned, 349.
Tuberculosis—Disinfection, Koch, 210.
Tuberculosis—Educating the Public, Koch, 210.
Tuberculosis, Human, Human Sputum the Main Source of, Koch, 206.
Tuberculosis, Is it Possible to Prevent, by Proper Dietetics and Hygiene? Kinney, 64.

Tuberculosis—Notification, Koch, 209.
Tuberculosis—Preventive Measures, Mather, 49.
Tuberculosis, Prophylaxis of, Lachapelle, 325.
Tuberculosis, Royal Commission on, 353.
Tuberculosis, Sputum the Main Source of Infection in, Koch, 201.
Tuberculosis, The American Congress of, 59.
Tuberculosis, The British Medical Congress of, 84.
Tuberculosis, The Curing of, in Sanatoria, 131.
Tuberculosis, The Fight Against, Koch, 197.
Tuberculosis, The Prevention of, 267.
Tuberculosis, To Prevent, Lemoine and Carriere, 52.
Tuberculous Infection, Foci for, Koch, 207.
Typhoid Bacillus in the Soil, Martin, 129.
Typhoid Fever Results from Filtered Water Compared with Previously Unfiltered, Bailey, 410.
Typhoid Fever, Treatment of, Ryerson, 448.

Urotropin, 517.

Vegetarianism and Evolution, 265.

Water Purification for New Orleans, 166.
Water Purification with Ozone, 301.
Water Supply, The New York, 459.
Water, the Physics of, Recent Advances in, Stradling, 400.
Welsbach Gas Lights, Improvement in, Mason, 331.
Whisky and Tobacco, 524.
Winter Resorts, Our New, 532.
Woandsu an Ideal Food, Guenther, 21.

Yellow Fever, Etiology of, 441.
Yellow Fever, Fomites and, Bell, 302.
Yellow Fever Institute, 533.
Yellow Fever, Quarantine and, 143.
Yellow Fever Preventive Serum, Alleged, a Failure, 371.
Yellow Fever, Sanitation and, in Havana, Havard, 13.

2 gal
754